

Department of Psychiatry and Neurochemistry
University of Lund
LUND

CAREERS IN ALCOHOLISM AND DRUG ADDICTION

Clinical and Epidemiological Studies

Kerstin Tunving



Lund 1986

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Thesis is based on following papers:

- I. O. Hagnell and K. Tunving: Prevalence and Nature of Alcoholism in a Total Population. *Social Psychiatry* 7, 190-201, 1972.
- II. O. Hagnell and K. Tunving: Mental and Physical Complaints among Alcoholics. *Quarterly Journal of Studies on Alcohol*, Vol. 33. No. 1 pp. 77-84. March 1972.
- III. O. Hagnell, E. Nyman and K. Tunving: Dangerous Alcoholics. *Scand. J. soc. Med.* I.
- IV. M. Berglund and K. Tunving: Assaultive alcoholics 20 years later. *Acta psychiatr. scand.* 1985;71:141-147.
- V. B. Andersson, K. Nilsson and K. Tunving: Drug careers in perspective. *Acta psychiatr. scand.* 1983;67:249-257.
- VI. K. Tunving and K. Nilsson: Young female drug addicts in treatment: A twelve years perspective. *The Journal of Drug Issues*, 15(3), 367-382, 1985.
- VII. K. Tunving: Fatal outcome in drug addiction.

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Careers in alcoholism and drug addiction.

Clinical and epidemiological studies.

By Kerstin Tunving.

Background

The disease concept of alcoholism, first described and formulated by E.M. Jellinek as "craving and loss of control" was in Sweden further developed and used by L.Kaij in his thesis on twin alcoholics (1) and later on by O. Hagnell in his epidemiological study of a total population, the Lundby cohort (2). Medical definitions of alcoholism were for the first time applied by the present author and O. Hagnell in a field investigation to a total population by studying prevalence and nature of the phenomenon among adult men in the Lundby population. This work formed a basis of knowledge about alcoholism in the medical sense, inspiring others to go on with the research on alcoholism and addiction; at that time, back in the sixties, an undeveloped science.

Not only could the Lundby investigation about prevalence and nature of alcoholism in a total population differ between three different degrees of alcohol dependence or alcohol involvement among the investigated males, the results also gave meaning and content to the term "hidden alcoholism", as two-thirds of the male alcoholics in the Lundby study at that time (1957) proved to be unknown to the social authorities. It was also possible to show that male alcoholics from Lundby in some cases were known to the hospital services in Lund as patients but treated under other diagnoses than alcoholism (3). Thus "hidden alcoholism" in the medical service area started to be a concept. Nowadays we seem to be more aware of the fact that alcoholism may occur among the patients at our hospitals but that the diagnosis of the addiction may be covered by other diagnoses such as heart failure, liver damage, depressions, and so on.

Medical definitions of alcoholism were also used when investigating 257 male alcoholics, consecutively treated at a psychiatric clinic at a hospital in Lund. One of the hypotheses at that time was (4), that it might be fruitful to try to differentiate and define certain groups of alcoholics with clinical traits in common, among those admitted to treatment. Various groups could perhaps need different prevention strategies. And more knowledge about subgroups among the alcoholics could perhaps be a first step towards broadening the therapeutic arsenal which at that time was strict, consequent, human but very limited.

As this investigation took place at a psychiatric clinic it was natural to take an interest in psychiatric symptoms or mental complaints and behaviour disturbances among the patients. In this aspect the work was somewhat unique at that time since the dominating interest otherwise was to study somatic sequels of chronic alcoholism (5).

Mental and physical complaints bringing the alcoholics to the psychiatrist were for example recorded by means of a medical questionnaire (6). The results of the medical inquiry were compared with the results of asking "normal men" of the same age from Lundby, who belonged to the same catchment area as the psychiatric clinic the same questions. Not only could the men in the clinical sample be compared with "normal men", we also knew the few alcoholics among the "normal men" in the total population and thus had a possibility to compare the complaints of the alcoholics in the total population with those of the alcoholics treated at the clinic. This gave an epidemiological anchorage to our studies of the selected clinical sample.

The most demanding and at the same time the most spectacular groups of alcoholics admitted to treatment at the psychiatric clinic were the so-called "dangerous" or assaultive alcoholics and the alcoholics who had made

serious attempts to commit suicide. It seemed meaningful to study thoroughly the alcoholics in these extreme groups characterized by introvert or extrovert aggressive behaviour and it was also possible to find that they represented the ends of a scale of psychopathia - neurosis - continuum. Twenty years later a new perspective was given on the original clinical findings as it was found that the subgroups mentioned also differed in degree of excess mortality.

During the sixties a new category of addicts, the narcotic addicts or the "junkies" turned to the psychiatric services to get help.

The background was as follows:

The habit to inject large doses of amphetamine intravenously first appeared among criminal gangs and in the lower socio-economic classes in the Stockholm area and then spread to other strata in society and in other parts of Sweden. In the year 1968 the social authorities in Sweden estimated the number of amphetamine addicts to be 10 000. Ever since the sixties there has been an illegal market of amphetamine smuggled into Sweden from the European continent.

Around 1968 the "hippie" movement reached Scandinavia. A lot of teenagers began to take an interest in drugs like cannabis and hallucinogens. Students and young people from the middle classes began to smoke strong haschisch, sold illegally on the streets. When the "hippie" movement died, some teenagers got deeply involved in drugs, others stopped abusing at an experimental stage.

Some of the former hippies became opiate addicts, abusing morphine base, an impure product of raw opium, at the beginning of the seventies.

Later on heroin was introduced, namely in the summer of 1974 in Malmö (7) where young inexperienced haschisch smokers became heroinists during one summer. The "older" opiate abusers had to use heroin as it soon was the only opiate substance available on the street. During the period 1975-1985 the illegal market in the Malmö-Lund area has had an international pattern with an excess of cannabis, heroin and, in small amounts, cocaine. In addition to this there is also the domestic access to amphetamines.

As to the extension of the narcotic problem in Sweden, the Swedish Government took the initiative in 1979 (8) to try to count the drug addicts in the country. Eighty percent of the addicts were in the city areas. The total number of drug addicts was estimated to be between 10 000 and 14 000. Around 7 000 were injecting either centralstimulants or amphetamines or opiates intravenously. At least 1500 drug addicts were supposed to live in the Malmö-Lund region.

Out of the concern for these new and growing problem groups in society a treatment center for drug addicts was built up in Lund in 1970: a ward at the psychiatric clinic for detoxification and short-term rehabilitation and an outpatient clinic located in the center of the town of Lund.

The detoxification unit with 14 beds and with good possibilities of providing qualified help in an unconventional way was from 1970 to 1980 the only specialized unit in the Malmö-Lund region. It has had the same management since it started (K Tunving and a group of staff members). Admission to the ward has been unselected. It might be added that the Swedish authorities have had a positive attitude towards addicts seeking help. It has also been a general impression that the detoxification ward, number 1 F, really over the years has been visited by a cross-section of the street addicts, intermittently wanting hospital care.

In a series of studies, the author together with a team of one sociologist and two psychologists has tried to describe and analyze the total number of young drug addicts consecutively admitted to the specialized unit for treatment of drug addicts in Lund from 1970 - to 1978 (9). Certain subgroups have offered challenges to treatment trials, such as the pioneer group of opiate addicts - the first in Sweden - from 1971 to 1972; 2) the first heroinists from 1974-1976 (10); and 3) female drug addicts, always fewer than the male drug addicts but demanding, with an intense need for help, and characterized by a high morbidity (11).

When studying the long-term course in drug addiction by following the 36 first opiate addicts for 10 years, it was a basic interest for the team to see if the Swedish opiate addicts "behaved" in the same way as opiate addicts described from U.S.A., a society very much different from the Swedish one. Was there a natural course of the disease, which was independent of environmental conditions? Gunne och Frykholm (12) studying long-term course in amphetamine addiction, could first establish that the amphetamine abusers, treated in the Stockholm area, followed the pattern described and formulated as the drug career, namely developing in stages: 1) experimental use 2) adaptational use 3) compulsive abuse 4) trying to abstain and 5) an eventual maturing out of addiction to a drugfree life.

This career perspective of drug addiction immediately had a practical value. The therapist learnt to see that for patients to leave drugs behind was a process of several years.

A sample of more than 500 patients had consecutively been admitted to the ward in Lund from 1970 to 1978. The ward's position as the only specialized unit in the area and the stable management of the ward seemed to be a guarantee for a fairly unselected collecting of patients. In a country

like Sweden, it is usually possible to get information about incidence of deaths in a population. Thus it might be expected that one could get a true version of the mortality among Swedish drug addicts in a short perspective by following the former patients during a decade. This was the ambition behind the last among the present studies.

Materials and methods

I. The Lundby cohort. The population used in this study is composed of all those people who were registered within a given geographical area in south Sweden on July 1, 1957. In all, there were 2 612 persons of whom 1 335 were men. Of these 950 were 20 years of age or older. All those registered in the area's parish books were included even if they were temporarily situated outside the area, for example to a military service, studying or some similar activity. None were included who were registered in some other area but happened to be in the research area on the census day. The area is in no way isolated. It has good communications, it lies within a densely populated part of Sweden, and it is close to other larger cities. The study area itself consists of a densely populated community in which approximately half the population lives. For a more detailed description, see Hagnell (1966), (2).

The collection of data includes:

1. A personal examination of the proband by interview and simultaneous observation of behaviour.
2. Information from other sources, official as well as personal. For a more complete presentation see Hagnell (1966) (2).

II. Out of a total clinic sample of 257 alcoholics, 147 men aged 33-50, outpatients at a special clinic for alcohol addiction at the department of Psychiatry at the University Hospital of Lund, were investigated by asking the patients to complete a medical questionnaire (6) undisturbed and with no time limit. Thirty-five percent of them were alcoholics, 60 % alcohol addicts and 5 % regarded as heavy alcohol abusers in whom no certain time of addiction could be discovered.

The results of the investigation were compared with those of a control group of 250 men of the same age from the Lundby cohort.

Out of this "normal" population twelve were known to be alcoholic. They were namely identified through investigation I. A comparison was made between clinical alcoholics versus control alcoholic cases.

The medical questionnaire used in this investigation by Marke and Nyman (1958) is a Swedish version based on two American questionnaires, the Cornell Medical Health Questionnaire and the Columbia Adult Health Inventory. It contains 191 questions, answered by "yes" or "no", divided into 20 item groups. Marke and Nyman constructed a neurosis scale of 32 items in the questionnaire (13). The neurosis scale seems to fulfil the ordinary demands of homogeneity. The Scale consists of the following 32 numbered questions of the Medical Questionnaire: 132-142, 11, 145, 148-152, 154, 155, 156, 158, 160, 171, 172, 174, 180-183, 185.

III. A total sample of clinical alcoholics (n=250) (7 were excluded; 5 from both group 1 and 2, 2 because they had not completed their medical questionnaires, described under II) was divided into:

1. dangerous alcoholics or assaultive alcoholics
2. suicidally inclined alcoholics, and
3. other alcoholics

The limits and definitions will be described below. The alcoholics were described from a "medical" definition on alcoholism. The clinical investigation was carried out as free interviews on which the division into groups was based. Variables that could be operationally defined were measured by

1. The medical questionnaire (see under II).
2. A test of ability was performed by a sub-sample in order to compare the verbal levels of the three different groups.

The Swedish version of Terman-Merill's word list was used, a test of vocabulary, "verbal intelligence test" (14).

3. The serial Colour Word Test (CWT) (15) shows the successive adaptation of the individual to the situation of conflict afforded by the test. The differentiation mainly concerns neurosis versus psychosis, psychopathy versus psychosis and normality, and organic dementia versus other kinds of abnormality or normality. It was applied on the above-mentioned subsample of 104 patients.

IV. The sample mentioned under III, 257 male alcoholics consecutively treated at an outpatient alcoholic unit at the Department of Psychiatry, University Hospital, Lund, from 1960 to 1963, was followed up until their death or December 31, 1980. No patients were lost and nobody had emigrated during the follow-up period. Cause of death was established. The Central Police Register and the sickness insurance register were searched for information about the probands. The registers of the Departments of Psychiatry in Lund were studied to find out if the probands had repeatedly been admitted to the psychiatric services.

V,VI,VII. These studies are based on a clinical sample of 524 young addicts with a diagnosis of drug dependence of opiates, amphetamines or with a mixed abuse consecutively treated at a specialized ward for drug addicts at St. Lars Hospital, Lund University, from 1970-1976. During the period when the sample was collected the unit was the only specialized one serving an urban, suburban and rural population of about $\frac{1}{2}$ million inhabitants. The patients were admitted to the ward because they wanted detoxification and often also for their rehabilitation at a therapeutic community or family home for adults. By a semistructured interview at first admission background data were collected. Urine samples were analyzed at a toxicological laboratory. The intensity of drug addiction was estimated. Data

on criminality and earlier treatment were verified by checking other social and hospital registers.

V. A subgroup in the sample of 524 drug addicts, namely a pioneer group of the 36 first opiate addicts treated 1970-1972 is followed for ten years.

VI. Subgroups of the sample mentioned, namely female drug addicts treated 1971-1972 (n=53) and female addicts with a habit of abusing heroin treated 1975-1977 (n=47) form the basis of study VI. When analyzing the morbidity of the females, a sample of female patients treated 1981-1982 (n=48) was also used.

VII. The sample of 524 young patients with a diagnosis of drug dependence or drug addiction at first admission is followed by mortality and criminality central registers up to their death or to July 31, 1984.

Data about the 62 deceased drug addicts, including death certificates, police reports and postmortem examinations were collected and analyzed. Background data belonging to the deceased and the living addicts were compared.

The representativeness of the sample was analyzed as follows: All cases during the period in question, 1970 to 1984, who had got a diagnosis of intoxication of narcotic substances at the postmortem examination, according to the Department of Forensic Medicine, University of Lund, and who were found to have been living in the catchment area at the time of death, were collected and analyzed. The quotient of cases who prior to death had been treated at the present ward/not treated at the ward was calculated. The "unknown" cases were searched in the registers of nearby psychiatric clinics.

Definitions

I. Alcoholism, abuse, addiction, chronic alcoholism.

A. Abusers. (Heavy drinkers, excessive drinkers). In this subgroup of heavy advanced drinkers both the drinking and the interest devoted to alcohol were essential features, even though their involvement with alcohol had caused no clear addictive symptoms. The cut off point vs. "social drinkers" was necessarily arbitrary, but as minimum criteria of high quantity/high frequency were accepted information about a more than average consumption of beer and spirits (alcohol intake probably almost every day) as well as repeated acute medical and social disabilities (intoxications, black outs, accidents, temperance board registrations).

B. Addicts. (drinkers with generalized dependence symptoms). Presence of at least two of the symptoms craving, shakes, drinking to relieve withdrawal symptoms, impaired control, inability to abstain. Synonymously is used alcoholism according to medical criteria or alcoholism in the medical meaning.

C. Chronics. (Drinkers with dependence as well as medical sequelae). This group was excluded from b) through positive information about cirrhosis, pancreatitis, neuromuscular illnesses, brain damage, convulsions, Delirium Tremens).

II. Dangerous and suicidally inclined alcoholics.

A. Alcoholics, characterized by dangerousness or assaultative behaviour.

(a) Persons who on one or several occasions have been taken in charge by the police or who, through the intervention of a Temperance Board, have been examined by the County Administrative Board in consequence of having threatened the life of another person while under the influence of alcohol.

(b) Persons who, while under the influence of alcohol have offered violence against wife, co-habitant or other person.

Actual physical violence means beating. threats with sharp weapons, throwing knives at people, etc.

(c) Persons who, while under the influence of alcohol, have been guilty of assault and battery, been convicted of that crime or of acts of violence against a civil servant (usually a policeman).

B. Suicidally inclined alcoholics.

(a) Persons who have been taken in charge by the police or by a Temperance board as dangerous to their own lives, I.E. who have made threats of suicide grave enough to make intervention necessary.

(b) Persons who have unmistakably tried to commit suicide-whether in connection with their admittance/examination at the clinic or earlier.

The wording of the above-mentioned criteria is in accordance with the Temperance Act, but in the present investigation these criteria were modified to the actual particulars of the case histories that also, on closer examination by the authorities, might be supposed to have caused the official action.

C. Other alcoholics.

This group includes the remainder of the clinical sample, i.e. these alcoholics who did not exhibit such deviations of behaviour as could be brought under headings I and II, using the above criteria.

III. Narcotic addicts.

A. Opiate addicts: Patients who gave a history of intense opiate abuse just before and during at least half a year before admission. They had generally a habit of injecting opiates, mostly heroin, intravenously. All developed a typical opiate withdrawal syndrome during the stay at the hospital.

B. Amphetamine abusers: Patients who gave a history of intense amphetamine abuse just before and during at least half a year before admission. Most of them injected amphetamines intravenously. The rest of the patients used to drink solutions of amphetamine. They often reported periods of amphetamine abuse, alternating with periods of alcohol drinking. All had a clinical picture of amphetamine addiction with hypermotility, restlessness and suspiciousness.

C. Patients with a mixed abuse. All had a mixed abuse of cannabis, sometimes combined with other hallucinogenic drugs (such as LSD), alcohol and sedatives. "Hippies" treated at the beginning of the seventies often belonged to this group. They had abused all kinds of legal and illegal substances, often in combination and at the same time during at least half a year before admission. The withdrawal symptoms fluctuated after dominating substance abused. In half of the cases the patients occasionally had been injecting stimulants or opiates (less than 100 injections reported). Mostly they declared that they did not really like using needles and syringes. They all had a heavy daily use of drugs before admission.

Results:

I. Prevalence and Nature of Alcoholism in a Total Population by O. Hagnell and K. Tunving.

A medical definition of alcoholism was applied to a total population, that of Lundby, a geographical area with 2 612 inhabitants, of whom 950 were men over 20 years of age. More than 99 % of these 950 were personally interviewed 1957 and additional information obtained for almost all of them. Point prevalence of alcoholism; that is all persons with a history of alcohol problems or with alcohol abuse or alcohol addiction present at the time of the investigation, was 10,3 % (n=98). 2,0 % of them were chronic alcoholics, 3,4 % alcohol addicts and 4,9 % alcohol abusers.

Certain personality characteristics (predominance of sub-solids), psychopathy and psychosomatic diseases (e.g. peptic ulcer) and occupations associated with higher morbidity (e.g. skilled industrial work) are variables which are found among both alcoholics and persons with mental insufficiency. Only one case of alcoholism in a female was found. Cultural factors were considered to be the main cause of this very great imbalance between the sexes. It is however noteworthy that in the same epidemiological investigation neuroses and mental insufficiencies were much more common among women.

II. Mental and Physical Complaints among Alcoholics by O. Hagnell and K. Tunving.

The results of a self-administered medical questionnaire by Marke and Nyman, applied to 147 male alcoholics, aged 33-50 (a subsample in a total sample of 250 male alcoholics, patients at a special clinic for alcohol abusers of the Psychiatric Department of the Hospital of Lund) were compared with the results of applying the same questionnaire to a contrast population of 250 men of the same age in a total population, the Lundby sample. In most groups of questions there were significant more yes-answers; that is more mental and physical complaints or symptoms, among the

alcoholics than among the normal men. The alcoholics not only had more nervous symptoms of all kinds. They also, for example, five times as often as normal men, reported having had venereal diseases.

The symptoms of minor mental disturbances were noticeably more pronounced in the 33-38 age group. In the groups of questions, intended to demonstrate the existence of depression and anxiety, the differences show the highest level of significance throughout all age groups. Finally, alcoholics in the normal population (n=12, found at the total investigation of the Lundby population, described under I) and alcoholics in the clinical sample have a similar pattern of symptoms with a predominance of such symptoms as tiredness, tenseness, disturbances of concentration ability and autonomic, depressive and neurological symptoms.

Even though it is not possible to say whether the symptoms registered in this investigation as prevalent are primary or secondary to the alcoholism, the results illustrate how common more or less disabling mental and physical disturbances are among alcoholics and also give an idea of what kinds of symptoms are prevailing.

III. Dangerous alcoholics. Personality Varieties in Aggressive and Suicidally Inclined Subjects.

By O. Hagnell, E. Nyman and K. Tunving.

The total sample of 250 alcoholics, in- or outpatients at a special psychiatric clinic for alcoholics, mentioned in paper II, was divided into 1) dangerous or assaultative alcoholics 2) suicidally inclined alcoholics and 3) other alcoholics. The results of the Marke Nyman medical questionnaire and psychological tests of verbal ability were compared between the three groups. The dangerous alcoholics were not found to be subjectively more aggressive or having more paranoic tendencies than the others. The hypothesis of

a relative lack of complaints in the dangerous alcoholics was supported.

On the other hand the suicidally inclined group reported a significantly higher number of symptoms of tiredness, heart complaints, depression and anxiety and more paranoid and aggressive symptoms than other alcoholics. They were thus, in accordance with the hypothesis, found to constitute a special group of alcoholics, characterized as they were by relatively numerous symptoms. The hypothesis of a relatively low verbal ability in the dangerous (psychopathic) alcoholics was supported by distribution of the sample into low and high groups of verballity.

The impression of alcoholics as a very heterogenous group was confined. All individuals in the sample had an alcoholic background but some of them, the dangerous alcoholics, reported few nervous complaints and had a low verballity. The suicidally inclined, on the opposite, had a broad spectrum of symptoms, including paranoid, depressive and aggressive feelings. Intellectually the members of the last group were found to be rather verbal. The controls formed an intermediate group to the variables applied. The results tend to confirm a hypothesis of a psychopathic-neurotic continuum as a major differentiating factor between the groups of alcoholics mentioned.

IV. Assaultative alcoholics 20 years later

by M. Berglund and K. Tunving.

The sample in paper II and III, 250 alcoholics from a special clinic for alcohol abusers were followed up 20 years later. (Seven cases, five of which were both suicidally inclined and assaultative and two who had not answered all questions in the medical questionnaire were included in the follow-up making a total of 257). The greatest future risk for assaultative alcoholics was premature death and not repeated assaultative behaviour. At the follow-up the

assaultative alcoholics had a 3.3 times increased mortality rate, the suicidally inclined 1.9 times and the others 1.7 times compared with the general population. The assaultative alcoholics had an increased rate of suicides, intoxications and other alcoholrelated deaths compared with other alcoholics. It is concluded that a skilled psychiatric evaluation of assaultative behaviour in alcoholism has an important predictive value.

V. Drug careers in perspective

by B. Andersson, K. Nilsson and K. Tunving.

Thirty-six opiate addicts (M/F 22/14) applied for help and were hospitalized at the detoxification unit at St Lars Hospital in the years 1971 to 1972. For most of them this short stay at the hospital was only the first of a long series of detoxifications and treatment periods. The average age at first admission was 21.7 and 20.0 for men and women respectively. Many of them were children from broken homes. The insecurity they felt at home resulted in difficulties at school. Most of them became so-called hippies and began to use haschisch. Later on they became addicted to opiates.

This pioneer group was followed for ten years. As expected the mortality rate was high (5 out of 36). Fifteen were still addicted, half of them hard-core addicts, using heroin daily, half of them polydrug abusers. Some of them had spent most of their adult life in prison. Sixteen persons were ex-addicts. Their way out of addiction is described. The results show that there is a turning process during which some kind of therapeutic action could be of considerable value. The ex-addicts have been through a period in which they had signs of an identity conflict. The women seemed more inclined to relapses than the men. The investigation stresses the importance of long-term strategies.

VI. Young female drug addicts in treatment: a twelve year perspective

by K. Tunving and K. Nilsson.

A facility for treatment of young drug addicts in a hospital environment and the patients applying for detoxification and care over a period of twelve years is the starting point of a series of observations concerning the characteristics of the female drug addicts and their career. The female drug addicts, constituting 30 % of the patients, have, just as the male addicts, often had an insecure childhood. Abuse of alcohol or mental disorders are common among parents or near relatives. At 14-15 years of age the young females seem to be drawn by curiosity into the subculture, where they learn to use narcotics. They leave it to the male addicts to experiment with new drugs and keep to older and better-known drugs themselves. The introductory phase of drug use is usually short. When the female drug addicts seek treatment at the facility for the first time they are, on average, 22 years old and mostly two years younger than the male addicts applying for treatment in the same situation. However, the females are as deeply involved in an intense habit as the men are. In other words, female addicts probably develop a compulsive abuse more rapidly than male addicts.

Many of the female drug addicts are mentally unstable and depression and suicide attempts occur in 23 % of the cases. Physical illness is common. But since women constantly apply for treatment they have long (longer than 1.5 years) abstinent periods to a greater extent than men. This is particularly true of women who have born children. The drug career may be short, less than six years. It may however be much longer and we have seen relapses come after years of abstinence. For long periods women addicts are prone to relapses and in need of long-term individual therapy and family support.

The most obvious psychological characteristics are splitted personalities with signs of denial, passivity and submission. It is difficult to envisage how women, who have been marked so early by a life of drug addiction and degradation because of their prostitution, would be able to break away from their habits. Most often they also support a criminal male, who is even deeper into addiction, by their habit.

VII. Fatal outcome in drug addiction

by K. Tunving.

A sample of 524 young drug addicts consecutively treated at a special hospital ward has been followed by registers for on average ten years. Totally 62 were found to have died drug-related deaths at an average age of 27,5 years; 19 of them had committed suicide. Representativeness of the sample is investigated. Roughly half of the forensic cases from the same catchment area, in which an intoxication of narcotic substances had been present at death, were identified as belonging to the sample studied. Almost all drug addicts in severe addictive stages, beyond the experimental phase, were found to be known by the psychiatric services in the area.

Background data at first admission for the deceased and the living addicts were compared. Sex and choice of drugs were predicitive factors. Males were exposed to greater risk than females. Opiate addicts died 5,4 times and the amphetamine abusers 2,5 times as often as expected respectively. It was possible to find a suicide-prone profile among the addicts, since those who later on committed suicide to a significantly high degree had a hereditary disposition for mental disturbances, especially affective disorders.

Postmortem findings are discussed. Killing substances proved to be opiates, barbiturates and alcohol and/or other psychotropic substances. Signs of heart disease were often found in the overdose cases. By an integration of prospec-

tive and retrospective data it was possible to establish at what stage of the drug career the addicts had died. Most of them were in a compulsive stage of abuse. But some were abstaining or trying to abstain from drugs. A critical period seems to be at 26-28 years of age.

Concluding discussion:

In a series of papers the long-term course in alcoholism and drug addiction has been studied. The study of prevalence and nature of alcoholism in a total or "normal" population firstly gave a basis of knowledge about the degree of involvement in excess abuse of alcohol among the 98 men who were found to have an abuse of alcohol or an addiction to alcohol in the first investigation 1957. Medical criteria were used to define the different alcoholics. L. Öjesjö (16) repeating the investigation in 1972 could find that 27 % of the 98 male alcoholics had died in accidents, suicides, heart diseases, cancers and pneumonia. None of the chronic alcoholics had recovered. Only 14 % of the alcohol addicts were in remission or better off. The only group among the alcoholics who had a more favourable outcome than the other subtypes were the heavy drinkers. Thus, the intensity of the dependence, the addiction to alcohol, according to this investigation, goes with few chances of recovery in the long-term perspective.

When studying young drug addicts clinically they are, in contrast to alcoholics described in the present papers, generally, when first admitted to treatment about ten years younger or on average 23 years old. Consequently the drug career in drug addicts is developing in teen-agers and very young adults. Another factor differing between the two groups of substance abusers are that drug addicts use the narcotic substances intravenously. The somatic sequels then in young drug abusers often are a result of using contaminative needles, causing bacterial or virus infections. Among alcoholics the somatic sequels often develop later and are due both to the chronic toxic influence of alcohol on the organs of the body and the life style with heavy smoking and so on. But what is common in alcohol and drug addiction is the predictive value in estimating the intensity of dependence and the degree of involvement in abuse in

every case. The alcohol addiction can be estimated by using medical criteria, the drug addiction by asking about daily use of narcotic substances for at least half a year in combination with information of having had the experience of more than 100 injections of narcotic substances.

One of the main problems in epidemiological investigations is the fact that there will be too small groups of carriers of special syndromes or behaviour disturbances to suffice for more penetrating investigations. In clinical samples the problems are so to say more concentrated. An outstanding group among the alcoholics admitted to treatment in the beginning of the sixties were those who had a "dangerous" or assaultative behaviour. Initially this group of patients was compared with other groups of suicidally inclined and "neutral" alcoholics. The patients were followed by registers for 20 years. It was possible to show that the violent or assaultative behaviour did not go on for years. But when studying the mortality the group with the assaultative behaviour had a significantly higher excess mortality than the other alcoholics and also had a higher risk of being the ones among the total clinical sample of alcoholics who committed suicide. There also was a tendency in the direction of the suicides in the followed sample to appear during the first ten years after admission.

In the drug addicts studied there is also an evident tendency in the same direction; the suicides appear during the first six years with a peak during the sixth year. But violent, assaultative or desperate behaviour was seldom described among the drug addicts and could consequently not be considered to be a predictive factor. Instead the drug addicts who later on committed suicide were found to have a hereditary disposition for mental disturbances, especially affective disorders. Thus, the conclusion will be, that behind suicides in alcohol and drug addiction is not only

the addictive behaviour. There is also evidence of problems of psychiatric nature in the background.

As one-third of the patients admitted to the ward for drug addicts in Lund were females and they often stayed for long periods in treatment, it was possible to study their involvement in drugs and in the narcotic subculture and follow their careers. Of course there have been attempts to describe special traits, typical to the female drug addict in a series of other works. But there is seldom formulated a model of the female drug career as in one of the later papers in the present study. As in Lena Dahlgren's study on female alcoholics (17), the rapid course of addiction and the amount of physical and mental sequels in young female abusers are impressing findings.

Through studies on long-term course in alcohol and drug addiction it is thus possible to get information about predictive factors behind the everywhere registered and described excess mortality accompanying the conditions. Knowledge of the natural course of the addictions also form the principal constituent of all kinds of prevention and therapeutic strategies.

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ACKNOWLEDGEMENTS

Many have participated in several ways in this work and I wish to express my sincere gratitude especially to:

My supervisors and teachers in clinical psychiatry and epidemiology:

Professor G. Eberhard Nyman

Professor Olle Hagnell

who introduced me in these fields of science
and to

Ass professor Mats Berglund. Without his gentle guidance this work would never have been brought into existence.

Professor Christer Alling for great interest and help.

My co-writers and collaborators, always ready to enthusiastic and inspiring discussions, namely:

Bengt Andersson, Lena Dahlin, Mats Fridell, Jan Hermansson,

Gunilla Lindström, Thomas Lundqvist, Märta Nyman, Kerstin

Nilsson, Marianne Silow, Margareta Swederius, S. Ola Thulin

Ass Professor Peter Krantz assisting, as an expert in forensic medicine

Lars Erdegård for helping with computer work

Marie Bergström for skilful assisting and data-collection

Sonja Persson for competent secreterial help and typing of manuscript

Ulla Persson and Gunilla Örnell for revisions of the English language.

Finally thanks to my mother, Edith, my husband Lars-Helge and our daughters Anna and Katarina, all of them understanding and supporting.

The works has been supported by grants from the Swedish Medical Research Council (K 68-21X-20005) and the Swedish Social Board, nr D 85/21:1 and Insurance Company Eirs ASn/Ga and the Craaford Foundation, Lund.

Prevalence and Nature of Alcoholism in a Total Population*

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Summary. The claim that alcohol causes somatic and mental abnormalities which often can be termed sicknesses is indisputable; that so many persons are involved that alcoholism is a mass sickness is also obvious. It is remarkable that the epidemiology of alcoholism is still but slightly known considering the enormous damage alcohol causes to the individual and to society. - Frequency figures from different studies vary widely. This is due, to a great extent, to the different definitions of alcoholism in use. - We have employed a purely medical definition and applied it to a total population, that of Lundby, a geographical area with 2 612 inhabitants, of whom 950 are men over 20 years of age (see Hagnell, 1966). More than 99% of these 950 were personally interviewed, and additional information obtained for almost all of them. 2.0% of the men were chronic alcoholics, 3.4% alcohol addicts and 4.9% alcohol abusers. Two thirds of the alcoholics were unknown to the Temperance Boards. - More than half (28 out of 51) of the advanced alcoholics (alcohol addicts and chronic alcoholics) were unknown to the Temperance Boards. We have, then, a large proportion of "hidden" alcoholics. Four per cent of all men (and 10% of those in age group 20-29) were in the Temperance Boards' register but were not alcoholics in the medical sense. Various parallel phenomena, sequelae or other factors related to alcoholism, are used by the Temperance Boards as criteria indicating alcoholism. It is necessary to be cautious in accepting these criteria, since they cover a much wider group than does the strictly medical definition. - Even if cultural factors have considerable influence they can hardly explain the very great imbalance of the sexes. In this context it may be significant that neuroses and mental insufficiencies are much commoner among women. Certain personality characteristics (predominance of sub-solids), psychopathy and psychosomatic diseases (e.g. peptic ulcer), and occupations associated with higher morbidity (e.g. skilled industrial work) are variables which are found among both alcoholics and

persons with mental insufficiency. - The epidemiology of alcoholism must be more thoroughly studied if the etiology and natural history are to be established. One possibility is to follow the population used in the present study, which, in 1947 and 1957, was described in detail in terms of personality, psychological, medical, psychiatric and social data. The prognoses of those who had previously been considered alcoholics would then be ascertained. At the same time those who had newly become alcohol sick could be compared with those who had not. In the web of causations which lie behind alcoholism such comparisons can give information about important background factors.

Résumé. Il est indiscutable que l'alcool est la cause de troubles somatiques et mentaux que l'on peut souvent appeler maladie; il est également évident que tant de personnes en sont atteintes que l'alcoolisme est une maladie de masse. Si l'on considère les dommages considérables causés par l'alcool à l'individu et à la société, il est étonnant que nos connaissances épidémiologiques de l'alcoolisme soient encore aussi réduites. Les indices de fréquence varient beaucoup d'une étude à l'autre. Cela est dû en grande partie aux différentes définitions utilisées de l'alcoolisme. Nous nous sommes tenus à une définition purement médicale et nous l'avons appliquée à une population totale, celle de Lundby, zone géographique de 2 612 habitants, dont 950 hommes de plus de 20 ans (voir Hagnell, 1966). Plus de 99% de ces 950 cas ont été soumis à une interview personnelle et des informations supplémentaires ont été obtenues dans presque chaque cas. 2.0% des hommes étaient des alcooliques chroniques, 3.4% souffraient d'un éthyisme important et 4.9% abusaient de l'alcool. 2/3 des alcooliques étaient inconnus des commissions de tempérance. Plus de la moitié (28 cas sur 51) des alcooliques gravement atteints (alcoolisme chronique et éthyisme important) n'étaient pas connus des commissions de tempérance. Nous avons donc une grande proportion d'alcooliques "cachés". Par contre, 4% de tous les hommes et 10% des cas appartenant au groupe d'âge de 20-29 ans, figuraient dans le registre des commissions de tempérance mais n'étaient pas alcooliques dans le sens médical. Ces

* Supported by grants from the Swedish Medical Council and the Swedish Social Board

commissions utilisent toute une série de phénomènes concomitants, séquelles ou autres facteurs liés à l'alcoolisme, comme critères indiquant l'existence de ce dernier. Il faut donc être prudent à l'égard de ces critères, puisqu'ils recouvrent un groupe beaucoup plus étendu que ne le fait la stricte définition médicale. Même si les facteurs culturels ont une influence considérable, ils peuvent difficilement expliquer la très grande disproportion entre les sexes. Dans ce contexte, il peut être significatif de noter que les névroses et les insuffisances mentales sont beaucoup plus courantes chez les femmes. Certains traits de caractère, la psychopathie et les maladies psychosomatiques (par exemple l'ulcère gastrique), et les occupations associées à une morbidité plus élevée (par exemple le travail industriel spécialisé) sont des variables que l'on trouve aussi bien chez les alcooliques que chez les personnes présentant une insuffisance mentale. - L'épidémiologie de l'alcoolisme doit être étudiée plus à fond si l'on veut fonder l'étiologie et l'histoire naturelle sur des bases solides. Une des possibilités consiste à suivre la population utilisée dans la présente étude et qui, en 1947 et 1957, fut décrite en détail du point de vue personnalité, données psychologiques, médicales, psychiatriques et sociales. Les pronostics concernant ceux qui avaient été considérés alors comme alcooliques seraient ainsi vérifiés. En même temps, on pourrait comparer ceux qui sont devenus alcooliques par la suite avec ceux qui ne le sont pas devenus. Dans l'ensemble des causes qui sous-tendent l'alcoolisme, de telles comparaisons peuvent donner une information quant aux facteurs importants qui sont la toile de fond de l'alcoolisme.

Zusammenfassung. Die Behauptung, daß Alkohol somatische oder psychische Abnormalitäten verursacht, die oft als Krankheiten bezeichnet werden können, ist unbestritten; es ist ferner klar, daß so viele Menschen darin verwickelt sind, daß Alkoholismus eine Massenerkrankung ist. Im Hinblick auf den enormen Schaden, den Alkohol dem Einzelnen und der Gesellschaft zufügt, ist es bemerkenswert, daß die Epidemiologie des Alkoholismus bisher nur wenig bekannt ist. - Häufigkeitsangaben weichen bei verschiedenen Untersuchungen weit voneinander ab. Dies ist weitgehend den verschiedenen Definitionen von Alkoholismus zuzuschreiben, die üblich sind. - Wir haben eine rein medizinische Definition gebraucht und sie auf eine Gesamtpopulation ange-

wandt, nämlich der von Lundby, einem geographischen Gebiet mit 2 612 Einwohnern, von denen 950 Männer über 20 Jahre alt sind (siehe Hagnell, 1966). Mehr als 99% von diesen 950 wurden persönlich interviewt, und zusätzliche Informationen wurden von nahezu allen gewonnen. 2% der Männer waren chronische Alkoholiker, 3,4% Alkoholsüchtige und 4,9% trieben Alkoholmißbrauch. Zwei Drittel der Alkoholiker waren den Abstinenzkomitees unbekannt. - Mehr als die Hälfte (28 von 51) der fortgeschrittenen Alkoholiker (Alkoholsüchtige und chronische Alkoholiker) waren den Nüchternkeitskomitees unbekannt. Wir haben also einen großen Teil "heimlicher" Alkoholiker, 4% aller Männer und von ihnen 10% standen im Register der Abstinenzkomitees, aber waren im medizinischen Sinn keine Alkoholiker. Verschiedene parallele Phänomene, Folgeerscheinungen oder andere mit Alkoholismus verbundene Faktoren werden von den Abstinenzkomitees als Kriterien verwandt, die auf Alkoholismus hinweisen. Man muß bei der Anwendung dieser Kriterien vorsichtig sein, da sie eine wesentlich größere Gruppe umfassen als die streng medizinische Definition. - Auch wenn kulturelle Faktoren einen beträchtlichen Einfluß haben, können sie kaum das sehr unausgewogene Verhältnis der Geschlechter erklären. In diesem Zusammenhang mag es bedeutsam sein, daß Neurosen und seelische Dekompensationen viel mehr unter Frauen verbreitet sind. Bestimmte Persönlichkeitszüge (vorwiegend sogenannte "subsolide", d.h. labile und suggestible), Psychopathie und psychosomatische Leiden (z.B. Magengeschwür), sowie Berufe, die mit höherer Morbidität einhergehen (z.B. Facharbeiter) werden sowohl bei Alkoholikern wie bei Personen mit psychischer Insuffizienz (Unzulänglichkeit) als Variablen gefunden. - Die Epidemiologie des Alkoholismus muß gründlich erforscht werden, wenn die Ätiologie und der Krankheitsverlauf bestimmt werden sollen. So besteht die Möglichkeit, der in der gegenwärtigen Untersuchung erfaßten Population nachzugehen, die 1947 und 1957 genau nach Persönlichkeit, psychologischen, medizinischen, psychiatrischen und sozialen Daten beschrieben wurde. Die Prognosen jener, die früher als Alkoholiker angesehen worden waren, könnten dann genau angegeben werden. Gleichzeitig könnten jene, die neu alkoholsüchtig geworden wären, mit jenen verglichen werden, die es nicht wurden. Bei dem Ursachengewebe, das hinter dem Alkoholismus liegt, können solche Vergleiche Informationen über wichtige Hintergrundfaktoren geben.

Introduction

Little is known of the epidemiology of alcoholism even though it is of great social importance. Most epidemiological investigations of alcoholism are based on samples in which alcoholics have been identified because they have misused alcohol to such an extent that specialised care or some form of detention has been necessary.

Gordon and Plunkett (1960) doubt that adequate data are available from which the prevalence of alcoholism could be calculated. Very little information about the morbidity of alcoholism exists, either for the problem as a whole, or for cases with clinical manifestations.

The frequency figures which have been given differ widely. The most likely reason is that the definitions of alcoholism used have been based on social criteria or a combination of social, medical, and other criteria.

In early German investigations estimates such as 2.4% (Luxemburger 1928) and 2.3% (Brugger, 1934) have been given. Bleuler (1955) states that the frequency in a district outside Basel was 8.3% and Fox (1967) concluded that one in every 13 American men over 20 years of age suffers from alcoholism. In Essen-Möller's (1956) study of the same district as the present authors looked at in 1947, 138 men were known to the investigators as abusers of alcohol at some time in their lives, out of whom 94 were abusers at the time of the study, which corresponds to 13.5% and 9.2% respectively of the adult male population aged 20 years and above. Twenty one of the male abusers were classified as severe, which is the same as classifying them as chronic alcoholics. The less severe group consisted of 73 current and 44 former abusers. In the female population, three possible abusers were found. Amark (1951) has calculated a frequency of 3.48%. His criteria, were very strictly defined (persons who have been treated for alcohol misuse at a psychiatric clinic, given care in an institution, or known to the Temperance Boards).

In certain population groups special investigations have been made. A very detailed one has been made by Inghe (1958) among the social welfare clientele in Stockholm. Among the "male paupers" ("socially displaced") he found alcoholism in 17.6% of the cases. This is equivalent to a morbidity risk calculated according to Strömgren's method, (Strömgren, 1935) of 18.8%; among the control cases there was a morbidity of 8.1%.

Both Amark and Inghe have done research among population groups which are interesting from many viewpoints. In this paper, however, we are trying to determine alcoholism in a "normal" population. Gordon and Plunkett point out it is important to formulate a medical definition of the condition, in order to separate those in a given population who have alcoholism, from those who do not. A medical definition does not exclude the psychological or social approach; on the contrary, a clear definition of the

problem is necessary for the study of, for example, social causes, or social consequences. An example of an inadequate definition of alcoholism for epidemiological research is, in our opinion, that used by WHO in which medical, social and explanatory phenomena have been mixed, plus the additional requirement that the individual concerned needs specialised care. Jellinek (1960), Kaij (1960) and Alström (1965) use purely medical definitions of alcoholism. This does not depend upon indirect measurements such as cirrhosis of the liver, nor upon social criteria such as confinement, treatment in an institution for alcoholics and so on, which only serve to confuse cause and effect. As Alström (1965) has submitted, rational research is impossible without clear, descriptive definitions. Since the intention of this work is to show the occurrence of alcoholism in a total population by the use of medical definitions, it is - since alcoholism tends to be a chronic condition - acceptable to use prevalence measurements.

Method and Material

Following the description of alcoholism as given by Alström (1965) and Kaij (1960), we have in this investigation used the definition given below, namely:

A. An increased tolerance for alcohol and thereby an increased consumption of the same/or

B. Changed behavioural pattern:

1. Trigger mechanism (that is, a pathological desire for alcohol after ingestion of small quantities - a "trigger dose").

2. Recovery requirement (the need of a drink the morning after abuse).

3. Black-out.

According to Kaij sequelae should not be mixed into 1, 2, or 3. It would have been desirable to be able to follow Kaij's line strictly, but it would have entailed too many problems of interview technique in a population study such as this one.

Alström (1965) states that "during the acquiral phase with its increase of alcohol tolerance and thereby increased consumption of alcohol, neither the subject nor those around him/her consider him/her to be an alcoholic. But even in this phase, it is of interest to investigate the organism's tolerance of alcohol which must be biochemically based". We call the alcohol misusers who have gone into a clear acquiral phase of alcohol sickness alcohol abusers. Alcohol abusers can often be presumed to be in the acquiral phase; that is, in an early stage of alcohol sickness. They are heavy consumers, often have one of the cardinal symptoms and border on the group of the alcohol sick. On the other hand this (special) group cannot be strictly separated from "normal consumers" or those whose misuse of alcohol results in, for instance, social complications. We agree with Kaij (1960 p. 13) that "this is a drawback to anyone who wants to classify individuals according to their attitudes towards alcohol, but in

the author's opinion it is biologically correct to avoid drawing sharp dividing lines between these groups, since alcohol abuse is no nosological entity in itself although it may be a symptom of a disease".

In this study the alcoholics are divided into three groups:

Alcohol abusers = with the symptom described under A above (Abu).

Alcohol addicts = who have at least two of the three symptoms under B (Add).

Chronic alcoholics = who have at least two of the three symptoms under B plus sequence symptoms, such as cirrhosis of the liver, polyneuritis, or deterioration (Chr).

Alcohol addiction and chronic alcoholism are called alcohol sickness. The alcohol sick plus the alcohol abusers, are together called alcoholics.

By applying the above definition to a population, alcoholism can be investigated epidemiologically.

Population. The population used in this study is comprised of all those people who were registered within a given geographical area in South Sweden on July 1, 1957. In all, there were 2612 persons of whom 1335 were men. Of these 950 were twenty years of age or older. All those registered in the area's parish books were included even if they were temporarily situated outside the area, for example doing military service, studying or some similar activity. None were included who were registered in some other area but happened to be in the research area on the census day. The area is in no way isolated. It has good communications, it lies within a densely populated part of Sweden, and it is close to other larger cities. The study area itself consists of a densely populated community in which approximately half the population lives. For a more detailed description see Hagnell (1966), Leighton et al. (1971).

Collection of data. The collection of data includes:

1. A personal examination of the proband by interview and simultaneous observation of behaviour.

2. Information from other sources, official as well as personal.

For a more complete presentation see Hagnell (1966).

The personal examination of the proband was preceded by careful preparation. For example an explanation of the purpose of the investigation was given to community leaders, ministers, doctors, and police. Shortly before the interview, a letter was sent to every household.

The main purpose of the interview was to gather information about the mental health of the individual concerned. It was possible to interview 98.7% of the males aged 20 and over and for another ten good information was obtained from other sources. It was therefore possible to make a reliable evaluation of the mental health of 99.5% of the subjects. Each interview was carried out by O.H. during a period exceeding one year. During this time the researcher met the same persons many times and could make many observations in the district. In-

formation from sources other than the personal examinations included official population registers, Temperance Boards, hospital and other institutional case histories, and information from key informants. The data thus collected form the basis for the diagnosis of the illness that we, in this work, denote as alcoholism.

Once the dependent phase has been reached it is thought that the organism's altered reaction to alcohol persists throughout his whole life (Alström, 1965). Even after decades of total abstinence it seems to remain.

Because the population has been examined systematically, and the drop-outs have been only 0.5% of the total, the results - provide the data for calculation of the prevalence of alcoholism and alcohol sickness according to the purely medical definition used.

Results

The prevalence was very different between the sexes; only one woman was diagnosed as alcohol sick. All the results which follow are therefore concerned with men. Table 1 shows the point prevalence of alcoholics in the community of Lundby, July 1, 1957. In Table 1, all persons with a history of alcoholism are included, even if they have no record of current alcohol misuse. In fact, one fifth of the alcoholics had no history of alcohol misuse during the two to three years before the census. 2.0% of men 20 years and older are chronic alcoholics. 3.4% are alcohol addicts, giving a total of 5.4% who are in that phase which is usually termed the dependent phase or alcohol sickness.

Alcohol abusers number 47 of the 950 men, or 4.9%. The total prevalence of alcoholics in this population is therefore 10.3% (98 of 950 men).

If one looks at the age distribution for all alcoholics, the prevalence is less in the lowest (20-29 years) and the highest (70+ years) age groups. It should be noted that the figures in Table 1, due to the research method, are most likely below the true prevalence.

Known to the Temperance Boards. (see Table 2). This is a social criterion. In Sweden it mainly includes people who have been in conflict with the police or other official authorities because of their alcohol consumption. The figures given about alcoholism in official statistics are founded on reports from the Temperance Boards. They do not give the figures of the "true prevalence" of alcoholism.

Table 2 shows that, of the 98 alcoholics, 37% were known to the Temperance Boards and 63% were unknown. Eight chronic alcoholics (42%) and 20 addicts (62%) were not known by the Temperance Boards. In the register of the Temperance Boards there were also 36 men who did not fulfill our criteria for alcoholism (4% of the total population). These were mostly young men, and it can safely be assumed that many of them have been reported to

Table 1. Point Prevalence of Alcoholics in the Community of Lundey, July 1, 1957. Men aged 20+ (Absolute numbers and percentage of total population of men aged 20+)

Age	Total population of men aged 20+			Alcoholics					
	N	Abusers		Addicts		Chronics		Total alcoholics	
		n	%	n	%	n	%	n	%
20-29	170	7	4.1	1	0.6	3	1.8	11	6.5
30-39	170	9	5.3	6	3.5	3	1.8	18	10.6
40-49	193	11	5.7	8	4.1	5	2.6	24	12.4
50-59	201	9	4.5	11	5.5	2	1.0	22	11.0
60-69	99	7	7.1	5	5.1	4	4.0	16	16.2
70+	117	4	3.4	1	0.9	2	1.7	7	6.0
20+	950	47	4.9	32	3.4	19	2.0	98	10.3

Note: only one woman was diagnosed alcoholic (alc. addict, age group 50-59)

Table 2. Known or not known by the Temperance Boards. Men aged 20+ (Absolute numbers)

Age	Total population of men aged 20+		Alcoholics							Known by the Temperance Boards without being clas- sified as alcoholics		
	N	Alcoholics in the population, July 1, 1957. n	Known by the Temperance Boards				Not known by the Temperance Boards				n	
			n	Abu	Add	Chr	n	Abu	Add	Chr		
20-29	170	12	7	(3	1	3)	5	(4	1	0)	18	
30-39	170	18	8	(4	3	1)	10	(5	3	2)	9	
40-49	193	24	10	(3	4	3)	14	(8	4	2)	5	
50-59	201	21	6	(1	3	2)	15	(8	7	0)	3	
60-69	92	16	5	(2	1	2)	11	(5	4	2)	1	
70+	117	7	0	(0	0	0)	7	(4	1	2)	0	
20+	950	98	36	(13	12	11)	62	(34	20	8)	36	

the Temperance Boards after a temporary drinking incident. Kaij (1970) has made a study of Essen-Möller's prevalence study in the same district in 1947. At that time 26 (18.8%) of the alcoholics were known to the Temperance Boards.

Even though the work of the Temperance Boards has become more effective nearly half of the chronic alcoholics are not known to the boards and somewhat more than half of the addicts. There are there-

fore large numbers of "hidden" addicts among the general populace. This is not unique for this population; the same phenomenon can certainly be found in most communities in the country.

Demographic groups (see Table 3). Migrations. Of the 950 men who were in Lundby in 1957, 677 were already there in 1947. 273 were newcomers. There were no real differences between old residents and newcomers.

Table 3. The Point Prevalence of Alcoholics by Demographic Groups. Men aged 20+^a

	Total popu- lation of men aged 20+		Alcoholics												Point prevalence	
			Expected numbers of alcoholics					Observed numbers of alcoholics								
	N	n	Abu	Add	Chr	n	Abu	Add	Chr	per 100 total population of men aged 20+	O E	p				
Newcomer	273	27.5	(13.5	8.9	5.2)	23	(9	10	4)	8	0.8					
Remainder	677	70.5	(33.6	23.3	13.8)	75	(38	22	15)	11	1.1					
Marital state																
Married	621	68.0	(31.9	23.5	12.9)	50	(27	20	3)	8	0.7	.01 ^b				
Unmarried	255	24.0	(12.2	6.9	4.9)	34	(16	8	10)	13	1.4	.01				
Divorced	18	2.1	(0.9	0.8	0.3)	9	(1	4	4)	50	4.3					
Widowed	56	3.9	(2.1	0.8	0.9)	5	(3	0	2)	9	1.3					
Education																
Common school	868	90.0	(43.1	29.6	17.6)	94	(46	29	19)	11	1.0					
Common school + more	82	8.0	(4.1	2.5	1.5)	4	(1	3	0)	5	0.5					
Social groups																
Social groups I and II	574	59.4	(28.3	19.4	11.7)	46	(24	15	7)	8	0.8	.01 ^b				
Social group III	376	38.5	(18.6	12.6	7.5)	52	(23	17	12)	14	1.4	.01 ^b				
Occupational groups																
General and unskilled labourer + farm labourer	348	36.0	(17.3	12.1	6.9)	47	(22	15	10)	14	1.3	.01				
Farmer + minor farmer (crofter)	261	27.3	(12.8	9.1	5.4)	13	(8	4	1)	5	0.3	.001				
Skilled industrial worker	200	20.9	(10.0	6.8	4.0)	28	(12	10	6)	14	1.3	.05				
Clerk etc.	75	7.7	(3.6	2.5	1.5)	8	(4	2	2)	11	1.0	-				
Work demanding theoretical training	45	4.4	(2.2	1.5	1.0)	2	(1	1	0)	4	0.5					

a For the method of calculation, see Hagnell (1966) pp. 110-113

b Chi-square test used on total group of men aged 20+

There is possibly a weak tendency towards more alcoholism among the younger age groups of old residents than among the newcomers, and an opposite tendency among the older age groups. This may be a question of bias - it may have been more difficult to get information about younger persons who had moved in, especially if they had arrived a relatively short time before the census date.

Marital state. There are about 40% more alcoholics than expected among the unmarried compared with the total population ($p < .01$). There is a significant difference in occurrence of alcoholism between the unmarried, and the married together with the previously married ($p < .01$). Among the previ-

ously married, the divorced stand out. Of 18 divorced, nine are alcoholics and eight of these nine are alcohol sick. There are no divorced alcohol sick in the age group 20-39; all are found in the group age 40-69, which can possibly be interpreted as an indication that divorce is a complication of alcohol sickness.

Education. At the time of this research only the first six years of formal schooling were available at Lundby; after that, pupils had to go to the nearby city for further education and training. Most had gone through elementary school and we had to be satisfied with two categories, namely, those with elementary school, and those with elementary school

plus further education. This further education was in many cases very limited. However, among those who had a further education the frequency of alcoholism was somewhat lower than expected and there were no chronic alcoholics in the category.

Social group. We have tried to make a social group categorisation according to the one used in Swedish statistics (I = high, II = middle, III = low). In social groups I and II there were fewer, and in social group III somewhat more alcoholics than expected.

Occupation. As previous research has indicated, unskilled workers have a higher rate of alcoholism than other groups of men. What is perhaps most remarkable is that qualified industrial workers, etc., have a distinctly higher frequency of alcoholism (30%) than would be expected. Farmers have a considerably lower incidence of alcohol sickness than expected, 70 per cent less than men in other groups.

Mental disorders (see Table 4). Neuroses are as common among the alcoholics as among the non-alcoholics. Psychoses are relatively few in such a small population as this. Of the 25 cases there were five among the alcoholics; one with an earlier schizophrenic episode, three with depressions of whom two had clearly organic illnesses with torpidity and disturbance of memory.

Psychopathy is three times as common among the alcoholics as compared with others. In the whole sample there were 52 psychopaths, more than half of whom were in the age groups 20-39. A weak tendency towards a preponderance of alcoholic psychopaths can be found in the higher age groups. This may be due to a tendency towards

alcoholism in people who have other forms of social maladjustment as well, or it may be due to the fact that older alcoholics are termed psychopaths solely because of their alcohol misuse. The correct explanation cannot be determined from the available data. A review of the data on these persons, however, makes the first alternative seem the most likely. (It should at the same time be remembered that other explanations are possible).

"Mental lesion" includes, primarily, different types of organic states such as mild brain damage, but because it has sometimes (in about 10% of cases) been difficult to distinguish from other syndromes, (e.g.) suspected schizophrenic deterioration) all the cases been placed in one group (see Hagnell, 1966, pp. 134-135 and Essen-Möller & Hagnell, 1971). The occurrence of evident mental lesion is 90% higher among alcoholics than might be expected from the whole population ($p < .001$). In the age groups 20-49 years the frequency of mental lesion is about as high for the alcoholics as in the normal groups. From 50 years of age up there are considerably more alcoholics with mental lesion. This could indicate that the deficiencies are of a kind which have developed in step with the length of alcohol misuse, either as a toxic effect on the brain or through these individuals having sustained other brain damage, such as concussion. In the group "probable lesion" there are no differences.

Even if one separates the alcoholics with evident mental lesions the observed/expected ratios are, for abusers 1.2 to 1, for addicts 1.5 to 1, and for chronics 3.8 to 1. Here, as previously, we wish to make reservations because of the relative smallness of

Table 4. The Point Prevalence of Alcoholics by Mental Disease, and by Attempted Suicide.
Men aged 20+

	Mental disease in the total popu- lation of men aged 20+					Alcoholics				Point prevalence per 100 total population of men aged 20+		
	N	n	Abu	Add	Chr	n	Abu	Add	Chr	O	E	p
Neuroses	119	12.1	(5.7	4.1	2.5)	13	(12	0	1)	11	1.1	
Psychoses	25	3.0	(1.3	1.1	0.5)	5	(2	2	1)	20	1.7	
Psychopathy	52	4.7	(2.3	1.3	1.1)	14	(5	7	2)	27	3.0	
Evident mental lesion	142	14.3	(6.8	4.6	2.9)	27	(8	8	11)	19	1.9	.001 ^a
Probable mental lesion	113	11.4	(5.5	3.8	2.3)	11	(7	3	1)	10	1.0	
Character neuroses	3	0.3	(0.1	0.1	0.0)	0	(0	0	0)	0	0.0	
Attempted suicide	7	0.7	(0.3	0.1	0.1)	4	(1	3	0)	57	5.7	

a Chi-square test used on total group of men aged 20+

the sample, but we want, nevertheless, to point out that the study includes all the individuals in a total population. The best way to get around this problem is to make another follow-up study of the sample. During the 25 year period between 1947 and 1972 it will be possible to state with certainty who was not an alcoholic in the beginning and who has become one by the end, thus determining the incidence of alcohol sickness.

In the population seven certain suicide attempts are known. Four were made by persons who are alcoholics according to our criteria.

Personality (see Table 5). An attempt at personality determination according to Sjöbring's personality classification system (Sjöbring, H., 1958, 1963, 1971) (Perris, C., 1965) (Hagnell, O., 1966, short description) has been made. With regard to the V-factor, St-factor and C-factor no differences were found. On the other hand, considerably more mediosolid than supersolid and more subsolid than mediosolid were diagnosed as alcoholics ($p < .01$).¹ For the calculation of the statistical probability Cochran's Criterion has been employed (Maxwell, 1961).

Somatic diseases (see Table 6). An excess of alcohol sickness (70%) is found among persons with peptic ulcer ($p < .05$) in this population. In addition there were some uncertain cases in which we could not verify the diagnosis. It has also been impossible to divide the ulcers into *ulcus ventriculi* and *ulcus*

duodeni. This was mainly due to the fact that it has not been possible to get information from the examining department concerning older patients treated a long time ago, or where it has been said that the patient had peptic ulcer before X-ray techniques had become so developed that these diagnoses could be distinguished by means other than operation or autopsy. The point prevalence for peptic ulcer is highest among men in the thirties and then decreases with age. The ratio observed/expected is of the same size for abusers, addicts and chronic alcoholics.

For other registered diseases - cholelithiasis, respiratory, musculo-skeletal - we could find no differences. The frequency for nephrolithiasis and cardiovascular diseases was somewhat less than expected.

Care in psychiatric hospital (see Table 7). The alcohol sick have more often (50%) been treated at psychiatric hospitals for a mental disorder without the alcoholism having been diagnosed. The hidden alcoholism is not only a problem in the normal population but also in hospitals, psychiatric wards included. The problem of "hidden" alcoholism in a big general hospital will be dealt with in a forthcoming paper by Hagnell and Sandahl. As has been shown we have been unable to find an excessive occurrence of neurosis. Clinical experience shows, however, that neurotic defence mechanisms and insufficiency reactions² develop in many alcoholics.

In a study of alcohol misusers who have come to

Table 5. The Point Prevalence of Alcoholics Related to Solidity (So-factor) According to Sjöbring. Men aged 20+

	Total population of men aged 20+	Abusers			Addicts			Chronics			All alcoholics		
		O	E	O/E	O	E	O/E	O	E	O/E	O	E	O/E
So-	208	14	10.2	1.4	10	7.1	1.4	9	4.2	2.1	33	21.4	1.5
So	445	22	21.8	1.0	17	15.1	1.1	8	8.9	0.9	47	45.8	1.0
So+	297	11	14.6	0.8	5	10.1	0.5	2	5.9	0.3	18	30.6	0.6

C. R. = 2.81^a $p < .01$

a Calculated on all alcoholics by age. Maxwell (1961), p. 63-72.

1 Solidity factor is the degree of lability and suggestibility in emotional and intellectual life. Subsolid persons can be described as: - quick, agile, engaged, subjective, enthusiastic, defiant, pleasing, suggestible, variable, acts on the spur of the moment. Supersolid persons can be described as: - slow, objective, steady, balanced, controlled, earnest, dry, consistent, dependable, circumspect (Hagnell, 1966a, 1966b).

2 Insufficiency reaction. In this group is included conditions which are acute, and pronounced as to symptoms and onset. These conditions may be diseases or deviations from the patient's usual psychological capability and capacity for work. They must cause him real suffering, reduce his general psychophysical well-being, and they often force him to consult a doctor. In this concept, psychoses are not included. The term "mental de-compensation" is used synonymously with "insufficiency reaction".

Table 6. The Frequency of Peptic Ulcer among Alcoholics.
Men aged 20+

Ulcers in the total population of men aged 20+			Alcoholics							
Age	N	n	Expected			n	Observed			Point prevalence per 100 total population of men aged 20+
			Abu	Add	Chr		Abu	Add	Chr	
20-29	2	0.1	(0.1	0.0	0.0)	0	(0	0	0)	0
30-39	12	1.3	(0.6	0.4	0.2)	4	(3	1	0)	33
40-49	9	1.1	(0.5	0.4	0.2)	2	(0	2	0)	22
50-59	22	2.3	(1.0	1.1	0.2)	3	(1	2	0)	14
60-69	7	1.1	(0.5	0.4	0.3)	1	(1	0	0)	14
70+	12	0.7	(0.4	0.1	0.2)	1	(0	0	1)	8
20+	64	6.6	(3.1	2.4	1.1)	11	(5	5	1)	17

$$\frac{O}{E} = 1.7 \quad \frac{O}{E} (\text{Abu}) = 1.6 \quad \frac{O}{E} (\text{Add+Chr}) = 1.7$$

$$C.R. = 1.93 \quad p < .05$$

Table 7. Psychiatric Care Among Alcoholics (alcoholic care is not included)
Men aged 20+

Psychiatric care in the population of men aged 20+										
			Expected			Observed			Point prevalence per 100 total population of men aged 20+	
Age	N	n	Abu	Add	Chr	n	Abu	Add		Chr
20-29	6	0.4	(0.2	0.1	0.1)	1	(1	0	0)	17
30-39	8	0.8	(0.4	0.3	0.1)	0	(0	0	0)	0
40-49	20	2.5	(1.1	0.8	0.5)	4	(1	2	1)	20
50-59	18	1.9	(0.8	0.9	0.2)	3	(1	1	1)	17
60-69	12	1.9	(0.9	0.6	0.5)	2	(1	1	0)	17
70+	6	0.4	(0.2	0.1	0.1)	2	(2	0	0)	33
20+	70	7.2	(3.4	2.4	1.4)	12	(6	4	2)	17

$$\frac{O}{E} = 1.5 \quad \frac{O}{E} (\text{Abu}) = 1.8 \quad \frac{O}{E} (\text{Add+Chr}) = 1.6$$

$$C.R. = 1.94 \quad p < .05$$

an alcohol consultation at the Psychiatric University Clinic in Lund, Hagnell, Nyman and Tunving (1971) have, through various psychological tests, etc., shown that these alcoholics in their test-psychological pattern are similar to the other psychiatric clientel.

Discussion

The definitions we have used to characterise the individuals' degree of dependence on alcohol are simple and descriptive, the symptoms easily recognized and thus well suited for use when analysing the numbers and characteristics of alcohol-dependent people in a population.

The point prevalence of alcohol-dependency in Lundby of 10.3% (abusers 4.9%; addicts 3.4% and chronics 2.0%) may seem high. If one compares the results with those reached by Alström (1965) in Stockholm where he calculated (approximately) that more than 3% of the male population could be considered severe alcohol abusers and at least 7% mild misusers (yet clearly misusers); or similar results, reached through different definitions of alcoholism, as those of Inghe (1958), fixing the level at 8.1% of the male population in Stockholm as alcohol misusers, and Fox (1967), giving one of 13 American men over 20 years of age as alcoholic, then our results are acceptable. One reason that these prevalence figures may seem high is the conventional picture of the alcoholic. Fox (1967) writes "only three per cent of the total alcoholic population is on skid row". "Most persons suffering from alcoholism are found in homes, offices, places of business, in every walk of life without regard to social standing, occupation, intelligence, education, national origin, colour or race". This is in line with our findings. Only a small number fitted the picture of the chronically decadent, socially deranged alcoholic. A large number of the seriously alcohol sick were not noticeable away from home, but hid behind a facade and showed themselves, in many ways, to be "hidden alcoholics". This was confirmed by the fact that the Temperance Boards knew of only 37% of the alcoholics, though some of the unknown were seriously alcohol sick.

The figures we have are exclusively confined to men. Is there no female alcoholism in Lundby? Even though the investigations have been very intensive, and have covered the whole population, we have not found more than one female alcoholic - which probably is associated with the cultural milieu in Lundby at the time of the research. However, as Hagnell has shown earlier (1966, 1970), there was a high frequency of nervous breakdowns among women. Is there possibly the same "morbidity" among men and women, the same tendency for mental diseases in both sexes but which is expressed in a different manner according to sex, perhaps influenced by "sex roles" or other cultural circumstances? Earlier authors, most recently Helgason (1970)

have taken up this question. He has reanalysed the material from his survey in 1964 of "the epidemiology of mental disorders in Iceland". Now he has assigned the probands to one diagnosis each, either neurotic or alcoholic. Neurosis is more common among women, alcoholism among men. The total morbidity for each sex is of the same order. Helgason suggests the possibility of both of these illnesses having at least partly the same origin.

This conclusion is supported by our observation that alcoholics have more often than others in the same population been given psychiatric care as in-patients for diagnoses other than alcoholism.

In many respects our findings are in agreement with earlier conclusions. Thus we find an excess of psychopaths among alcoholics (observed/expected ratio 3.0 to 1) and evident lesion mostly of organic type (observed/expected ratio 1.9 to 1) compared with the remaining male population. There are no differences concerning the occurrence of neuroses among alcoholics compared to other males. There is a difference, however, with regard to recorded suicide attempts in that four of the seven serious attempted suicides on record in the whole male population were among the 98 alcoholics. This figure is small but agree completely with Ettlinger's (1970) figures from "the special consultation for patients who have made suicide attempts" at Södersjukhuset, Stockholm, where she concluded that 50-60% of the suicide attempts were made by alcoholics.

An unusually large number of peptic ulcer cases were also found among members of the group of alcoholics. This has been found in some other studies as well. As an example, Hagnell and Wretmark (1957) found that in a group of alcohol misusers who sought psychiatric care there were an abnormally large number with peptic ulcers. It might be no surprise that alcoholics with symptoms of peptic ulcer seek help. However, even in an unbiased population such as ours there is an excess of peptic ulcer among alcoholics. Other registered illnesses such as cholelithiasis, nephrolithiasis, cardiovascular, respiratory, and musculo-skeletal diseases were not found in abnormal numbers. This appears to be the opposite of other previous studies which have reported that illnesses such as cardiovascular disease, bronchitis and tuberculosis are more common among alcoholics.

The explanation of this is presumably that the data were taken from hospital populations which are biased towards the selection of alcohol sick patients who have a somatic illness.

In the description of "the normal personality" according to Sjöbrink we have found, as did Hagnell (1966) at an earlier date, that persons who have had nervous breakdowns and are alcohol sick are significantly more subsolid than other men in the population. The observed/expected ratio shows a falling value from subsolids in relation to mediosolids and mediosolids as compared to supersolids; $So- = 1.5$; $1 - So = 1.0$; $1 - So+ = 0.6$; 1 .

With regard to social data our results are in ac-

cordance with what has been found earlier. There are, for instance, more alcoholics in social group III than in the other social groups. The unmarried and, especially, the divorced are groups which have a high frequency of alcohol sickness. What is remarkable is that there is such a high frequency of alcoholism in the group of skilled industrial workers as compared with other males in the population. In contrast we find that farmers are only slightly afflicted with alcoholism; they have an observed/expected ratio of 0.3: 1 ($p < .001$). Hagnell (1966) has shown earlier that skilled industrial workers have more mental breakdowns than other men. The opposite is true for farmers; they have less. When one recognises that the same pattern is found with regard to alcoholism one asks the question: is there a common etiological background for mental breakdowns and alcohol sickness?

It is known that there is a clear relation between the degree of freedom in the work situation and the occurrence of mental disturbance. (Obradovic et al. 1970; Dahlstrom et al., 1966). The work environment may also change rapidly and with the changeability new and shifting problems arise which create new risks; not least, the mental stresses increase. Stress, a fast work pace and lack of freedom are problems for many individuals in modern working life, as is structural change within industry and the business world, with constant displacement and relocation of the working force. Both employer and wage earner agree that problems of the working environment must be met with effective preventive measures.

Essen-Möller (1956) and Hagnell (1966) have shown that the occurrence of obvious but not crippling personality deviations is so frequent that, for many people, adjustment to fixed norms and fixed achievements must demand considerable effort.

Even though the information in this paper is from the 1950's and the above discussion has only really been taken seriously in the 1960's, a part of the excess of mental sickness among skilled industrial workers can certainly be explained in this fashion.

The epidemiology of alcoholism must be investigated more thoroughly if the problems of its etiology and course are ever to be solved. It will then be possible to trace the natural history of alcohol abuse and addiction. Perhaps the assumption "once an alcoholic, always an alcoholic" is correct, or there may be a spontaneous healing tendency as with other forms of misuse (O'Donald and Winick, 1965; Robins and Murphy, 1967). If the latter is true, what characterises the alcoholic who has been cured? The authors have, as had McCord and McCord (1960), the possibility of describing the background factors for alcohol misusers and healthy individuals with, however, the difference that we have used a total population. But which is post or propter? To answer this, it would be profitable to go through all the individuals in the cohort again, 15 years after the first

investigation, and see who have become alcohol sick since the earlier study, up to and including 1972, and deduce how they are different from those who have not contracted the sickness.

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Mental and Physical Complaints among Alcoholics¹

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SUMMARY. The results of a self-administered medical questionnaire show that alcoholics consistently report more symptoms of mental and physical disorders than nonalcoholics.

IN PSYCHIATRIC STUDIES of alcoholism, detailed reports may be found on the prevalence of such complications as alcoholic psychosis, delirium tremens, Korsakoff's syndrome, liver cirrhosis and polyneuropathy. These conditions are not really parts of the process of addiction, but rather manifestations of the toxic effects of years of excessive alcohol consumption or consequences of the alcoholismic way of life with neglect of food and rest and frequently occurring accidents. Less attention has been paid to the fairly frequent consequences of the disease that amount to more or less disabling mental disturbances, such as depression, long periods of neurasthenia or tension states. Patients who have abstained for a long time, perhaps for several years, may still complain of considerable nervous symptoms. In a patient with an established alcoholism, in the medical sense of the word, it is seldom possible to know whether these nervous symptoms are primary or secondary to the disease. To make it possible to distinguish between cause and effect, it will first of all be necessary to investigate the occurrence of nervous symptoms and the possible predominance of alcoholics with certain types of such symptoms (1).

In the present study we compared the occurrence of nervous and

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Received for publication: 14 October 1969. Revision: 29 April 1971.

physical symptoms in alcoholics, and the possible predominance of certain types of such symptoms, with those in a normal control population.

MATERIAL AND METHODS

Control Population

All inhabitants in a geographically defined region in the south of Sweden, Lundby, were examined by Hagnell (2) in 1957. The investigation consisted of separate interviews with each inhabitant, information from other sources, particulars gathered from hospital records and key informants (doctors, police, and others with an intimate knowledge of the population) and personal observation. Of the 950 men over the age of 20, 10.3% exhibited alcohol problems (3), and were divided into 3 types: those with alcoholism (2%), alcohol addicts (3.4%) and alcohol abusers (4.9%). Alcohol addiction means that the proband has 2 of 3 cardinal symptoms (4, 5): (1) A craving for another drink in the morning the day after abuse, (2) trigger mechanism or (3) black-outs. This definition resembles Jellinek's gamma alcoholism (4), with "craving and loss of control" as the major symptoms. Alcoholism had the same criteria as alcohol addiction, with the addition of permanent mental or somatic sequels, such as deterioration or cirrhosis of the liver. Alcohol abusers had a history of 1 or more periods of manifest alcohol abuse in the last 2 years, of such a type that indicates that they have entered a clear acquiral phase of alcohol sickness (3). The age distribution of the 3 classes is shown in Table 1. A more detailed description of this population is to be found in Hagnell (2).

In 1962, Hagnell and Marke² studied a sample of the same population, 298 men and 226 women aged between 33 and 50 years. The Medical Questionnaire of Marke and Nyman (6), the Marke-Nyman Temperament Scale (7) and a supplement of 12 special questions on peptic ulcer were mailed to respondents with a letter explaining the aim of the investigation. If the first letter was not answered, 2 further reminders

TABLE 1.—*Age Distribution of Alcohol Abusers, Alcohol Addicts and Alcoholics in Lundby, 1957, in Per Cent*¹

Age	Total N	Abusers	Addicts	Alcoholics	Total
20-29	170	4.1	0.6	1.8	6.5
30-39	170	5.3	3.5	1.8	10.6
40-49	193	5.7	4.1	2.6	12.4
50-59	201	4.5	5.5	1.0	11.0
60-69	99	7.1	5.1	4.0	16.2
70-95	117	3.4	0.9	1.7	6.0
Totals	950	4.9	3.4	2.0	10.3

¹ From: Hagnell and Tunving (3).

² Unpublished.

were sent at intervals of 3 weeks. Of the 298 men, 36 did not answer and 12 could not be found by the post office authorities. Of the 226 women, 216 answered. No notable mental or social differences were found between the respondents and nonrespondents. The questionnaire was completed at each proband's home which, of course, implies a certain inconsistency since he might have been influenced by members of his family. Such methodological deficiencies will have to be accepted and duly considered at the evaluation. In the present report we will only analyze the responses of the 250 male probands because they form a natural contrast sample to the clinical sample of male alcoholics.

Among the 250 male respondents 12 had been identified as alcoholics or alcohol addicts in the 1957 survey. Among the 36 nonrespondents were 9 alcoholics and alcohol addicts, and among the 12 unavailable ones, none. An additional 20 had at some time been reported to the local Temperance Boards, i.e., they had had at least 1 incident of alcohol abuse. No notable personal, medical or social differences were found between the responding and nonresponding alcoholics.

Alcoholics

The clinic sample consisted of 147 men aged 33-50, outpatients at the special alcoholism clinic at the Department of Psychiatry at the University Hospital of Lund.³ Half of the patients came of their own accord, the rest were sent by local or county Temperance Boards or by the police authorities. All patients were treated by the same psychiatrist (Tunving). A few were admitted as inpatients as a result of their consultation, but most were treated as outpatients because of the limited availability of beds. There were no essential differences between the inpatients and the outpatients. Each patient came to the clinic several times and at regular intervals. In order to be accepted for the study, at least a week's abstinence was demanded of each patient to ensure reasonable cooperation. A few were intoxicated on every visit to the clinic and could not be included in the sample.

The investigation consisted of a general psychiatric examination and, in some cases, a psychological test. The patients were also asked to complete the Medical Questionnaire, undisturbed and with no time limit. The participation of the patients was very good. Of the 147, 35% were alcoholics and 60% alcohol addicts; 5% were regarded as heavy alcohol abusers in whom no certain signs of addiction could be discovered although it was strongly felt that it was present in many.

Some of the patients in our sample had been known to the alcoholism clinic for a long period, others came for the first time. An analysis of variance showed that the length of treatment or number of contacts did not influence the questionnaire results.

³ More information about the total group of 250 alcoholics is contained in HAGNELL, O., NYMAN, E. and TUNVING, K. Dangerous alcoholics; personality varieties in aggressive and suicidally inclined subjects. [Unpublished.]

Among the alcoholics, 44% were urban dwellers (in communities of over 10,000 inhabitants), compared with 24% of the controls; 68 and 78%, respectively, were married, 3 and 1% widowed, 9 and 3% divorced; 73 and 95% had only elementary school education.

The Medical Questionnaire

The Medical Questionnaire of Marke and Nyman (6) is a Swedish version based on two American questionnaires, the Cornell Medical Health Questionnaire and the Columbia Adult Health Inventory. It contains 191 questions, answered by "yes" or "no," divided into 20 groups (see Table 2).⁴ Marke and Nyman constructed a neurosis scale of 32 items in the questionnaire. The neurosis scale seems to fulfill the ordinary demands of homogeneity. The Scale consists of the following 32 numbered questions of the Medical Questionnaire: 132-142, 144, 145, 148-152, 154, 155, 156, 158, 160, 171, 172, 174, 180-183, 185.

RESULTS

Alcoholics versus Nonalcoholics in the Control Population

The 12 alcoholics and alcohol addicts showed more gastrointestinal symptoms, symptoms of tiredness, autonomic and depressive symptoms, tenseness and disturbances of concentration ability and neurological symptoms than the 238 nonalcoholics. One question concerning the abuse of alcohol was answered in the affirmative by 9 of the 12. When the 20 men who had been reported to the Temperance Board are added to the 12, the symptom patterns became more like those of the general population.

Small differences could be found with the aid of the 32-item neurosis scale. The 12 alcoholics and alcohol addicts show, however, a slight trend toward more symptoms of neurosis, but when the 20 alcohol abusers are added no differences were found. Although the sample is too small for any definite conclusions, the findings seem to indicate that the alcoholics in a general population have more nervous, gastrointestinal and neurological symptoms than other men of the same age.

Clinic Alcoholics versus Control Population

The alcoholics gave more yes answers to each question than the controls (Figure 1).

⁴ A copy of the questionnaire (with an English translation) may be obtained by ordering NAPS Document 01672 from ASIS National Auxiliary Publications Service, c/o CCM Information Sciences, Inc., 909 Third Ave., New York, N. Y. 10022, remitting \$2 for microfilm or \$5 for photocopy. A copy may also be obtained from Skandinaviska Testförlaget AB, Oxenstiernsgatan 17, 115 27 Stockholm, Sweden.

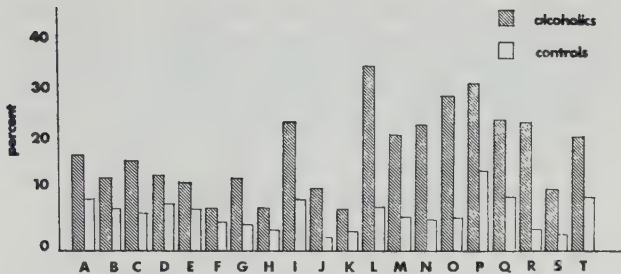


FIGURE 1.—Percentage of Affirmative Answers in Each Group of the Marke-Nyman Medical Questionnaire

Table 2 gives the total number of yes answers for each group of questions according to age group. The Kolmogorov-Smirnov test was used for calculations of significance (8). In most groups there are significant differences between alcoholics and controls and then only in one direction: the alcoholics report significantly more symptoms than the controls.

No significant differences were found in symptoms from joints and skin. The alcoholics, however, had significantly more symptoms from eyes and ears and gastrointestinal, paranoid, respiratory and cardiac symptoms. Some questions were intended to detect also nervous complaints centered around these regions, for example, "Do you often feel a lump in the throat?," "Do you often have to clear your throat?," "Do you feel a pain in the chest or around the heart?" and "Do you occasionally get a pain in the heart when you are excited or worried?" There are also more "organic" questions, such as "Do your calves and ankles often become swollen?" and "Have you had tuberculosis?" It is not surprising that the alcoholics have many more neurological symptoms. On a question such as "Do your hands tremble?" there is, of course, a risk of registering not only neurological symptoms but also symptoms of alcohol withdrawal, but otherwise the questions are of purely neurological character. The alcoholics reported more urogenital symptoms than did the controls, mainly because of one question, "Have you ever had any serious trouble from your sexual organs?" Venereal diseases were five times as frequent among the alcoholics as among the controls.

TABLE 2.—The Number of Affirmative Answers to the 191 Items of the Medical Questionnaire, by Alcoholics (A) and Controls (C), by Age Group

Symptoms	AGE GROUPS										Totals
	33-38		39-44		45-50		51-55		56-60		
	A	C	A	C	A	C	A	C	A	C	
A. Eyes and ears (9) ¹	59	67	93	95*	96	83	248	245†			
B. Nose, throat and respiratory (12)	66	89	105	57†	92	92	263	238†			
C. Cardiac (15)	107	111†	153	71†	121	90*	381	272†			
D. Gastrointestinal (20)	100	148*	157	162	167	139†	424	446†			
E. Joints (7)	35	47	50	35	47	50	132	132			
F. Skin (5)	18	23	29	31	16	17	63	71			
G. Neurological (15)	79	64*	131	66†	97	58	307	188†			
H. Urogenital (11)	31	26	43	38*	54	44	128	106†			
I. Tiredness (7)	73	42†	94	60*	92	73	259	175†			
J. Asthenia (6)	26	4*	53	17†	28	13	107	84†			
K. Endocrinological (12)	35	36*	55	36	50	30†	140	102†			
L. Restlessness; alcohol problems, etc. (7) ²	107	53†	149	53†	117	40†	373	146†			
M. Autonomic disturbances (11)	126	60†	129	59†	109	60*	364	179†			
N. Depression (7)	74	28†	94	33†	85	44†	253	105†			
O. Anxiety (6)	83	41†	106	24†	78	31†	267	96†			
P. Sensitivity (6)	87	83†	106	91†	125	83	318	257†			
Q. Aggressiveness (9)	100	94†	136	77†	98	68*	334	239†			
R. Excitability (9)	100	27†	131	25†	94	37*	325	89†			
S. Paranoid (5)	26	10†	33	16	26	12	85	38*			
T. Intellectual disturbances; loss of concentration ability, etc. (6)	52	51*	76	59	66	51	194	161†			

¹ Number in parentheses = number of questions.² The symptoms restlessness and alcohol problems are grouped together in the questionnaire.

* .05 > p > .01.

† .01 > p > .001.

The answers to questions intended to demonstrate minor mental disturbances show that the alcoholics reported significantly more symptoms such as tiredness, asthenia, autonomic disturbances, depression, anxiety, sensitivity, aggressiveness, excitability and disturbances of concentration ability. These symptoms of minor mental disturbances are noticeably more pronounced in the 33-38 age group. The levels of significance are highest in this group and decrease with age. In the 45-50 age group symptoms such as tiredness, autonomic disturbances, sensitivity, aggressiveness and excitability show differences of little or no significance. In all age groups, there is a significant difference in the answers to the L group of questions, which includes a direct question on the abuse of alcohol. In the N and O groups of questions, intended to demonstrate the existence of depression and anxiety, the differences show the highest level of significance throughout all three age groups.

On the 32-item neurosis scale the alcoholics' mean values are considerably higher than the controls: In the 33-38 age group the alcoholics had mean scores of 8.31, the controls 1.78 ($p < .001$); in the 39-44 age group, 7.35 and 1.68 ($p < .001$); and in the 45-50 age group, 6.61 and 2.13 ($p < .005$). The percentages of alcoholics and controls, in the same age groups, who gave no "yes" answers were 10 and 61, 26 and 48, and 25 and 53.

CONCLUSION

Alcoholics in a normal population and alcoholics in a clinic sample showed a similar pattern of symptoms, with a predominance of such symptoms as tiredness, tenseness, disturbances of concentration ability, and autonomic, depressive and neurological symptoms. Even though it is not possible to say whether the symptoms registered as prevalent are primary or secondary to the alcoholism, the investigation has produced useful hypotheses on which to base further studies.

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ABSTRACT

A self-administered medical questionnaire was used to compare the symptoms of 147 men alcoholics, who were outpatients at the Lund University Hospital Alcoholism Clinic, with the symptoms of a sample of 250 men from the general population, both groups aged 33 to 50. The alcoholics consistently gave more yes answers to each question than the controls. The differences in gastrointestinal and eye and ear symptoms were significant at the .01 level and those in respiratory, cardiac, endocrine and urogenital symptoms, tiredness, asthenia, autonomic disturbances, depression, anxiety, sensitivity, aggressiveness, excitability and disturbances of concentration ability were all significant at the .001 level. The differences were most pronounced in those aged 33 to 38 years.

Dangerous Alcoholics

Personality Varieties in Aggressive and Suicidally Inclined Subjects

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Dangerous alcoholics. Personality varieties in aggressive and suicidally inclined subjects. Hagnell, O., Nyman, E., and Tunving, Kerstin (Psychiatric Research Center, University of Lund, S:t Lars sjukhus, Lund, Sweden). *Scand J Soc Med* 1973, 3 (125-131).

Alcoholics registered as dangerous to others were compared, by means of a health questionnaire and individual testing, with a suicidally inclined group and non-dangerous alcoholic controls. Dangerous subjects reported conspicuously few nervous complaints, whereas the suicidal group was characterized by a broad spectrum of symptoms including paranoid, depressive and aggressive feelings as well as tiredness and irritability. Intellectually they were found to be rather verbal. The controls formed an intermediate group as to the variables applied. The results tend to confirm a hypothesis of a psychopathic-neurotic continuum as a major differentiating factor between the groups.

In personality descriptions and clinical studies of alcoholics and alcohol abusers, the sample in question has often been compared with normal subjects. For the differentiation between alcoholics and normal subjects, social status is, however, a factor of great importance. Neither can alcoholics reasonably be considered as a homogeneous group as to personality traits. In this investigation a differentiation has been attempted *within* a group of alcohol abusers, not from the point of their pharmacological reactions to alcohol (Jellinek and Kaij, 1,2) but according to the pathological pattern of behaviour in connection with their alcohol abuse. Fairly rough, yet socially important criteria were used, such as usually lead to some kind of public action.

The total sample of alcoholics in question was divided into: 1) dangerous alcoholics, 2) suicidally inclined alcoholics, and 3) other alcoholics. The limits and definitions of the sample will be described below; it may be mentioned here that all those in-

cluded in the sample were in- or out-patients at a special psychiatric clinic for abusers. The investigation was carried out to find psychiatric and psychological grounds for a distinction between three groups, two of which had been categorized as dangerous to the safety of others or themselves. To achieve this distinction, objective tests or questionnaires were used. The division into groups was based on the hypothesis that, from the psychological point of view, extrovert aggressive behaviour (dangerousness) on the one hand, and subjective suffering and introvert aggression (suicide risk) on the other hand, should reasonably represent the two polar-opposite concepts of psychopathy and neurosis.

MATERIAL AND METHODS

The present sample was described in a previous study by Hagnell & Tunving (3). Briefly, it could be defined as a sample of 250 alcoholics who in 1961-1963 were treated consecutively at a special clinic for alcohol abusers at the Psychiatric Department I of the Hospital of Lund, Sweden. All these patients were subjected to a general psychiatric investigation and clinical examination, supplemented by particulars from official sources (Temperance Boards; the police) and from relatives and others who could possibly supply relevant information. Ninety persons were in-patients. The characteristics of alcoholism among these did not differ from those of the rest of the sample. Thus no selective criterion for admission to the ward (six beds) was applied.

For the present study, only such medical data from the records were considered as were of importance to the "medical" definition of alcoholism (2), i.e. at least two out of the three cardinal symptoms: 1) the craving for another drink in the morning the day after abuse, 2) black-outs, and 3) trigger mechanism, i.e. further, excessive consumption of alcohol after an initial smaller quantity. It was found that 75 % of the alcohol abusers were registered with

Table I. *Alcoholics: Age*

Alcoholics	Age						Total
	10-19 years	20-29 years	30-39 years	40-49 years	50-59 years	60-69 years	
Dangerous alcoholics		11	10	14	9	4	48
Suicidally inclined alcoholics		6	8	9	8	2	33
Other alcoholics	2	12	53	57	40	5	169
Total	2	29	71	80	57	11	250

Temperance Boards. At the clinical examination, 92 % were diagnosed as alcoholics according to the definition by Kaij (2). 8 % were labelled as abusers. In 30 % of the case histories, the alcoholism was found to be complicated by delirium tremens, hallucinations, and epilepsy of abstinence.

The division into groups was carried out as follows: In Sweden, the label "dangerous alcoholic" has an official and legal significance with special consequences in the way of social care and supervision to the individual. Similarly, those in the group of "suicidally inclined" may be subjected to legal intervention if evident danger to their own safety can be established. It should be pointed out, however, that this division was based not merely on the actual legal action, but on a total evaluation of all available information. Out of the whole sample, 75 % had been subjected to legal intervention and/or were registered with Temperance Boards. The subdivision was made according to the following criteria:

I. *Dangerousness*

(a) Persons who on one or several occasions have been taken in charge by the police or who, through the intervention of a Temperance Board, have been examined by the County Administrative Board in consequence of having threatened the life of another person while under the influence of alcohol.

(b) Persons who, while under the influence of alcohol have offered violence against wife, co-habitant or other person. Actual physical violence means beating, threats with sharp weapons, throwing knives at people, etc.

(c) Persons who, while under the influence of alcohol, have been guilty of assault and battery, been convicted of that crime or of acts of violence against a civil servant (usually a policeman).

II. *Suicidally inclined*

(a) Persons who have been taken in charge by the police or by a Temperance Board as dangerous to their own lives, i.e. who have made threats of suicide grave enough to make intervention necessary.

(b) Persons who have unmistakably tried to commit suicide—whether in connection with their admittance/examination at the clinic or earlier.

The wording of the above-mentioned criteria is in accordance with the Temperance Act, but in the present investigation these criteria were modified to the actual particulars of the case histories that also, on closer examination by the authorities, might be supposed to have caused the official action.

III. *Others*

This group includes the remainder of the clinical sample, i.e. these alcoholics who did not exhibit such deviations of behaviour as could be brought under headings I and II, using the above criteria.

The distribution of the sample in age strata, educational levels, and social classes (tripartite according to Swedish official statistics) is given in Tables I-III. The extreme two age strata were excluded. As can be seen from Table I, the analysis of the remaining four age strata showed no

Table II. *Alcoholics: Education*

Age group (years)	Dangerous alcoholics			Suicidally inclined alcoholics			Other alcoholics			Total
	Elementary education	High school	College and higher education	Elementary education	High school	College and higher education	Elementary education	High school	College and higher education	
10-19							2			2
20-29	11			5	1		10	1	1	29
30-39	8	2		7	1		49	3	1	71
40-49	11	2		9			52	2	3	79
50-59	9		1	7	1		32	1	7	58
60-69	3	1		2			5			11
Total	42	5	1	30	3		150	7	12	250

Table III. *Alcoholics: Social Groups*

Age group (years)	Dangerous alcoholics			Suicidally inclined alcoholics			Other alcoholics			Total
	Social Group			Social Group			Social Group			
	1	2	3	1	2	3	1	2	3	
10-19		1							2	3
20-29		3	8	1		5	1	5	6	29
30-39		3	6		4	4	1	19	33	70
40-49		5	8		4	5	2	23	32	79
50-59		5	5		3	5	7	9	24	58
60-69	2	2			1	1		1	4	11
Total	2	19	27	1	12	20	11	57	101	250

connection between age and any particular group. There are no statistical significances under the 5 % level.

Data collection

The clinical investigations were carried out as free interviews on which the division into groups was based. Other clinical traits registered at this examination will not be considered in the present study.

Variables that could be operationally defined were measured by

1) The Medical Questionnaire (MFS) according to Marke & Nyman which was used on the whole sample. This questionnaire has frequently been used before in Sweden for social psychiatric investigations. The items analysed are listed in Table IV. The scale consists of 20 item groups covering various somatic, psychosomatic, and mental groups of symptoms (4). As can be seen from the literature referred to, a homogeneous 32-item anxiety scale has been extracted from the MFS, which also was used here. This scale was presented in English in an earlier study (3). In the present study, a certain selection from the various item-groups of the MFS-scale was made based on the hypotheses advanced for the characteristics of each group. Thus only those somatic item groups were analysed that could be expected to have a mental or psychosomatic relevance. The individual tests were carried out on a sub-sample consisting of the first 104 cases out of the main sample of 250 patients, taken consecutively, and by a psychologist who did not know to which group each individual belonged.

2) A test of ability was performed by this sub-sample in order to compare the verbal levels of the three different groups. The Swedish version of Terman-Merill's word list was used (test of vocabulary, "verbal intelligence test" (11). In a previous study (4), Nyman showed that a high degree of "normal" neuroticism is related to a comparatively high verbality and similarly, Himmelweit (5) showed that psychopathic behaviour includes low verbality. The connection between extroversion of personality and psychopathic behaviour has also been well established in a number of studies by Eysenck (6).

3) The serial Colour Word Test (CWT) (7) shows the successive adaption of the individual to the situation of conflict afforded by the test. The differentiation mainly

concerns neurosis versus psychosis, psychopathy versus psychosis and normality, and organic dementia versus other kinds of abnormality or normality. It was applied on the above-mentioned subsample of 104 patients. Since the results did not differentiate, the method will not further be dealt with here. For those interested, see (7, 8).

Statistical method

Several previous studies have shown that these kinds of patients mostly belong to the lower social classes. It is, of course, necessary to see whether, in this case, the division into dangerous, suicidally inclined, and other alcoholics might also correspond to social or educational differences. These sources of error may, on the whole, be discounted, however, since it can be seen from Tables II and III Chi-square test used, there were no significances for the age groups. Whether rural or urban types of residence predominated in the sample was not analysed in detail. Subtle differences might, of course, exist between the various local authorities in their referral of patients to the clinic; on the other hand, during the period of collection of the sample (1961-1963), one central temperance agency of administration, associated with the County Administrative Board, had been supervising the practice since eight years, a fact which should have had a mediating effect.

For the statistical treatment, the choice of method was mainly directed by the skew distribution at the registration of pathological variables according to the questionnaire and by the influence of age on the various item groups. At the risk of not exploiting the statistical assessments to the full, standardized cuttings of the distributions were employed and by reason of the age influence on the questionnaire's variables, the youngest and the oldest ten-year-groups were excluded, comprising 13 persons, which makes 250 minus 13=237 (cf. Table I, Chi-square test used, no significances for the age groups). Regarding the medical scale, the answers were first divided into the groups 0 points, and more than 0 points, then sorted into the categories of dangerous, suicidally inclined, and others and finally subjected to the χ^2 -test. The more comprehensive 32-item scale, previously tested with regard to homogeneity, was statistically tested by median cuttings, as the group of "0 yes-answers" was disproportionately small. One-tailed tests were used, as the hypothesis throughout was that

Table IV. Analysed item groups from the MFS-scale

Cardiac symptoms

22. Have you been told by a doctor that your blood-pressure is too high?
23. Have you got a pain in the chest or around the heart?
24. Do you feel a pain in the region of the heart even if you don't work hard?
25. Do you often have palpitations?
26. Does your heart often beat very quickly?
27. Do you get a pain in the region of the heart when you are agitated or worried?
28. When you have a pain in the region of the heart, does it then extend into the left shoulder and arm?
29. Do you often have difficulty in breathing?
30. Do you get out of breath more quickly than other people?
31. Do you get out of breath on the stairs?
32. Do you get out of breath even though you are sitting down?
33. Have you ever had a serious heart attack?
34. Do your ankles and calves often get swollen?
35. Do you often have cramp in the legs?
36. Have you been told by a doctor that you have a heart disease?

Tiredness

100. Do you often feel completely exhausted?
101. Do you get completely tired out by work?
102. Have you often noticed that you get more easily tired nowadays?
103. Do you often feel tired and faint when you get up in the morning?
104. Does the least exertion make you tired?
105. Do you usually feel too tired even to eat at meal-times?
106. Do you suffer from nervous tiredness?

Symptoms of depression

143. Do you often feel lonely and depressed in company?
144. Do you often feel unhappy and sad?
145. Do you often feel uncomfortable and out of sorts?
146. Do you think it useless to plan for the future?
147. Have you ever lost all interest in life?
148. Do you often wish you were dead and away from it all?
149. Do you often feel that nobody needs you any more?

Aggressiveness

162. Do you have to make an effort to keep your temper?
163. Do you too easily give in to sudden impulses and whims?
164. Do you sometimes have fits of temper that you regret afterwards?
165. Are you easily irritated and agitated?
166. Are you irritated and annoyed by small frustrations?
167. Do you get angry if you are ordered what to do?
168. Do people often get on your nerves?
169. Do you easily lose your temper if you don't get your own way at once?
170. Are you often beside yourself with anger?

Paranoid symptoms

181. Do you have to be on guard even in the company of friends?
182. Do you think that people are trying to avoid you?
183. Have you a feeling that people are pretending not to see you in order to hurt you?
184. Do you usually have a feeling that people criticize you behind your back?
185. Do you feel that people are secretly opposing you?

the suicidally inclined, in comparison both with the dangerous and with other alcoholics, should be expected to exhibit a larger number of subjective complaints, while dangerous alcoholics (psychopaths) were expected to be relatively symptom-free.

RESULTS

A. Data from the questionnaire

(a) As can be seen from Table V and VI, overall calculations of χ^2 were made over all six cells, as well as special calculations: between various combinations of dangerous and suicidally inclined and "other" alcoholics.

Dangerous alcoholics: On several points, their distributions correspond to those of the controls (the group "others") and of the controls (others)+ the suicidally inclined, but they deviate in admitting comparatively little tiredness. Negative findings of

interest were also the lack of predominance in the dangerous alcoholics of reported (subjective) aggressiveness and of paranoid tendencies. There was thus supporting evidence for the hypothesis of a relative subjective lack of symptoms in the dangerous alcoholics.

(b) *The suicidally inclined alcoholics:* The tables and tests show a significantly higher degree of reported heart symptoms and of reported symptoms of tiredness and depression in the suicidally inclined group. They also differ from other groups in possessing a higher degree of reported paranoid and aggressive symptoms. In agreement with the hypothesis, they were thus found to constitute a separate group, relatively rich in symptoms.

B. Verbality

The hypothesis of low verbality in the dangerous (psychopathic) alcoholics found supporting evidence

Table V. Questionnaire answers for five item groups from the MFS-scale

The alcoholics are differentiated into dangerous (D), suicidally inclined (S) and other (O) alcoholics

Alcoholics	Yes-answers			Comparisons	χ^2	p
	None	One or more	All			
<i>Cardiac symptoms</i>						
Dangerous	23	21	44	D/S/O	4.7	0.10
Suicidally inclined	11	20	31	D/S+O	4.0	0.05
Other	56	106	162	D/O	3.9	0.05
Total	90	147	237	S/D+O	0.0	n.s.
				S/O	0.0	n.s.
<i>Tiredness</i>						
Dangerous	25	19	44	D/S/O	7.7	0.02
Suicidally inclined	8	23	31	D/S+O	4.9	0.05
Other	64	98	162	D/O	3.6	0.10
Total	97	140	237	S/D+O	2.7	0.10
				S/O	1.5	n.s.
<i>Symptoms of depression</i>						
Dangerous	24	20	44	D/S/O	9.8	0.01
Suicidally inclined	6	25	31	D/S+O	2.0	n.s.
Other	74	88	162	D/O	0.8	n.s.
Total	104	133	237	S/D+O	7.6	0.01
				S/O	6.3	0.01

in the distribution on low and high groups of verbalility, as can be seen from Table VII. This connection is not due to educational and social differences (Tables II and III).

C. The Colour Word Test (CWT)

A comparison between the groups of dangerous, suicidally inclined, and other alcoholics showed no differences as to the distribution into primary and secondary types according to the CWT. Taken as a whole, the entire group of alcoholics tallies with a previously examined sample from a psychiatric

clinic (6) which also means that all the variables of the present sample deviate in a pathological direction in comparison with a contrast sample from a somatic (orthopaedic) clinic.

DISCUSSION

After examination, the dangerous alcoholics were found to differ from other alcoholics by reporting less tiredness, but were not found to be more (subjectively) aggressive or to have more paranoid tendencies. The hypothesis of a relative lack of com-

Table VI. Neurosis (anxiety) scale

Alcoholics (237)	Yes-answers			Comparisons	χ^2	p
	Low	High	All			
Dangerous	29	15	44	D/S/O	5.5	0.10
Suicidally inclined	10	21	31	D/S+O	2.5	n.s.
Other	89	73	162	D/O	1.3	n.s.
Total	128	109	237	S/D+O	5.8	0.02
				S/O	4.5	0.02
				S/D	6.9	0.01

The sample is divided into 'Low' and 'High' number of yes-answers in the 32-item neurosis scale according to median cutting.

Table VII

Alcoholics (104)	Yes-answers		All	Comparisons	χ^2	p
	Low	High				
<i>Verbality</i>						
Dangerous	11	7	18	D/S/O	3.5	0.05
Suicidally inclined	6	7	13	D/S+O	2.3	n.s.
Other	27	46	73	D/O	2.5	n.s.
Total	44	60	104	S/D+O	0.0	n.s.
				S/O	0.1	n.s.
<i>Aggressiveness</i>						
Dangerous	18	26	44	D/S/O	5.0	0.10
Suicidally inclined	6	25	31	D/S+O	0.1	n.s.
Other	65	97	162	D/O	0.0	n.s.
Total	89	148	237	S/D+O	4.2	0.05
				S/O	4.0	0.05
<i>Paranoid symptoms</i>						
Dangerous	28	16	44	D/S/O	12.0	0.01
Suicidally inclined	16	15	31	D/S+O	1.7	n.s.
Other	128	34	162	D/O	3.7	0.10
Total	172	65	237	S/D+O	6.7	0.01
				S/O	8.9	0.01
				O/D+S	9.7	0.01

Terman-Merill's word list, Swedish version (11).
One-tailed test used.

plaints in the dangerous alcoholics was thus supported. On the other hand, the suicidally inclined group reported a significantly higher number of symptoms of tiredness, heart complaints, depression and anxiety and more paranoid and aggressive symptoms than other alcoholics. They were thus, in accordance with the hypothesis, found to constitute a special group of alcoholics, characterized by relatively numerous symptoms. The predominance of both aggressive and paranoid symptoms reported in this group may seem surprising when compared with the quite opposite findings in the dangerous group which, by reason of its behaviour, might otherwise have been primarily expected to admit more feelings of aggression and paranoia. The hypothesis of a relatively low verbality in the dangerous (psychopathic) alcoholics was supported by the distribution of the sample into low and high groups.

To sum up, the impression of alcoholics as a very heterogeneous group was thus confirmed. In this sample, where all individuals had an alcoholic background in common, some differed in being unconcerned and lacking in symptoms, whereas others were specially characterized by self-destructive

tendencies and numerous nervous complaints. These findings appear to be indications of the pre-morbid personality, since the differences would not have appeared if the abuse of alcohol were of decisive influence on the character of the symptoms. The results of the examination might be said to support the opinion of Popham & Smith in their study of 1964 (10), viz. that "to make studies of and comparisons in an alcoholic population must be considered to be of more interest from a research standpoint than comparisons between alcoholic populations and a normal material".

So far, the differences appeared on the analysis of the data from the questionnaire. The individual testing of a subsample gave a more homogeneous picture where the whole group showed a pathological trend when compared with a contrast sample from a somatic clinic.

ACKNOWLEDGEMENT

This work was supported by grants from the Swedish Research Council (K68-21 X-2005).

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Key words: Alcoholism; long-term follow-up; mortality; suicide; convictions.

Assaultive alcoholics 20 years later

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ABSTRACT – In a consecutive series of 257 alcoholics from an out-patient department 53 were judged as assaultive and 38 as suicidally inclined at the clinical examination 20 years ago. At the follow-up the assaultive alcoholics had a 3.3 times increased mortality rate, the suicidally inclined 1.9 times and the others 1.7 times compared with the general population. The assaultive alcoholics had an increased rate of suicides, intoxications and other alcohol-related deaths compared with other alcoholics. Repeated assaultive behaviour was uncommon. It is concluded that a skilled psychiatric evaluation of assaultive behaviour in alcoholism has an important predictive value.

Received May 24, 1984; accepted for publication July 5, 1984

Several studies have described violence and alcoholism to be associated (1, 2). The long-term prognosis of the subgroup of alcoholics known to behave violently is, however, not known. We do not know if assaultive alcoholics repeat their violent behaviour in more severe forms during their alcoholic career or if other kinds of behaviour prevail in the long run.

The present paper is a 20-year follow-up study of 257 consecutively examined male alcoholics. The initial findings regarding assaultive and suicidal behaviour, personality and mental and physical complaints have previously been reported (3, 4). Assaultive and suicidally inclined alcoholics are compared with other alcoholics regarding mortality, convictions, marital status, job situation and psychiatric treatment during the follow-up period.

Material and methods

The present series consists of 257 male alco-

holics consecutively treated at the out-patient alcoholic unit at the Department of Psychiatry, University Hospital, Lund, from 1960 to 1963. 92 % were diagnosed as alcoholics according to the definition of Kaij (5), i.e. at least two of the following three symptoms: loss of control, withdrawal symptoms and black-outs. In 30 % of the cases at least one episode of delirium tremens, hallucinations or abstinence epilepsy was reported. The mean age was 42 years, SD 11.

In connection with the initial examination one of the authors (K.T.) grouped the alcoholics into one of three groups described below according to a total evaluation of all available information.

I: Assaultive alcoholics

a) Persons who on one or several occasions have been taken in charge by the police or who, through the intervention of a Temperance Board, have been examined by the County Administrative Board in consequence of having threatened the life of another person while under the influence of alcohol.

b) Persons who, while under the influence of alcohol have enacted violence against wife, co-habitant or other person. Actual physical violence means beating, threats with sharp weapons, throwing knives at people, etc.

c) Persons who, while under the influence of alcohol, have been guilty of assault and battery, been convicted of that crime or of acts of violence against a civil servant (usually a policeman).

II: *Suicidally inclined alcoholics*

a) Persons who have been taken in charge by the police or by a Temperance Board as dangerous to their own lives, i.e. who have made threats of suicide grave enough to necessitate intervention.

b) Persons who have unmistakably tried to commit suicide – whether in connection with their admittance/examination at the clinic or earlier.

III: *Other alcoholics*

This group included the remainder of the clinical sample.

The characteristics of these three groups have been described in detail by Hagnell et al. (3). The assaultive group consisted of 48 patients with a mean age of 41 ± 13 (SD) years and the suicidal group of 33 patients with a mean age of 43 ± 12 years. A further five patients with a mean age of 37 ± 9 years were both assaultive and suicidal. The remaining 171 alcoholics had a mean age of 43 ± 10 years. There were no differences regarding social class, level of education or marital status at first examination. In the further analysis the five patients with both assaultive and suicidal behaviour will be counted both as assaultive and suicidal.

Follow-up examination

All patients were followed-up until their deaths or December 31, 1980. No patients was lost and nobody had emigrated during the follow-up period.

Cause of death. The patients were followed by means of the general population register and the local parish registers up to the 31st of December 1980. Copies of death certificates were received by the Central Bureau of Statistics and the causes of death were grouped according to the primary (= underlying) cause of death. Causes of death, classified according to ICD6 (6) which was used before 1968 were reclassified according to ICD8 (7).

In the present analysis figures for intoxications and "uncertain suicides" were presented together because the later diagnosis was not used before 1968. A special category "other alcohol-related deaths" was also used. It included alcohol-related neoplasms (pharynx, buccal cavity, liver, oesophagus), cirrhosis of the liver, alcoholism (as cause of death), epilepsy, accidents and violence (with the exception of suicides and intoxications).

The central police register. This register gives information about all crimes for all inhabitants in Sweden below the age of 80.

Sickness insurance register. From this register information was received about the number of days of sickness cash benefit and the number of sickness periods during 1979 and 1980. Information about the amount of sickness benefit, marital status and disability pension was also received from this register.

Psychiatric treatment. The register of the Department of Psychiatry, University Hospital, Lund, as well as of the mental hospital nearby, St. Lars, were studied. At the Department of Psychiatry the number of out-patient treatment sessions, emergency visits and in-patient admissions during the follow-up period were noted. In St. Lars hospital only the number of in-patient treatment periods were noted, because no special out-patient service was offered during most of the follow-up period.

Statistics. Man-years of exposure to the risk of death were calculated by the method of Schmidt & deLint (8). The expected number of deaths was estimated from death risks in

Table 1

Observed (O) and expected (E) deaths of assaultive ($n = 53$), suicidal ($n = 38$) and other ($n = 171$) male alcoholics by 10-year age groups

Age	Assaultive alcoholics			Suicidal alcoholics			Other alcoholics		
	O	E	O/E	O	E	O/E	O	E	O/E
< 39	3	0.3	10**	2	0.2	10*	3	0.7	4.3
40-49	7	0.7	10**	4	0.5	8**	11	3.0	3.7**
50-59	8	1.6	4.4**	2	1.6	1.3	12	9.2	1.3
60-69	5	3.1	1.6	4	3.0	1.3	23	13.2	1.7*
70-	6	3.1	1.9	3	2.9	1.0	15	10.9	1.4
Total	29	8.9	3.3**	15	8.1	1.9*	64	37.0	1.7*

Poisson distribution

** $P < 0.01$

* $P < 0.05$

the official statistics for the population of Sweden. Standardization has been carried out for age, sex and periods of time. Significance levels were tested according to the Poisson distribution (9).

Proportions have been compared with the Chi-square method (10).

Results

Total mortality. Table 1 shows the total mortality by 10-year age groups in the different subgroups. The death rate was increased 3.3 times in the group of assaultive alcoholics, 1.9 in the group of suicidal alcoholics and 1.7 in the other alcoholics. Increases were found in all age groups in assaultive alcoholics and other alcoholics, but mainly in the age groups below 50 years in suicidal alcoholics.

Cause-specific mortality. Table 2 gives the cause-specific mortality. Suicides and uncertain suicides plus intoxications were increased to about the same degree in the assaultive group and in the suicidal group, while the increases among the other alcoholics were considerably less pronounced (assaultive alcoholics versus other alcoholics $\chi^2 = 4.16$, $P < 0.05$). The assaultive alcoholics also showed a pronounced increase in other alcohol-related deaths as opposed to the suicidal alcoholics who had almost no increase at all. The individual other alcohol-related causes of deaths

were: *Assaultive alcoholics*: liver cirrhosis 3; accidents 2; alcohol-related neoplasm 1; "alcoholism" 1; epilepsy 1. *Suicidally inclined alcoholics*: "alcoholism" 1. *Other alcoholics*: accidents 5; liver cirrhosis 2; alcohol-related neoplasm 2; "alcoholism" 1.

The causes of death in the assaultive group and in the other alcoholics group were very similar. The magnitude of increase regarding suicides, intoxication and other alcohol-related deaths was, however, more than twice as high in the assaultive group compared with the other alcoholics group ($\chi^2 = 9.76$, $P < 0.01$). The profile in the suicidal group differed distinctly from the other two groups in that all increases were caused by suicide, uncertain suicide and intoxications.

Fig. 1 shows the time relationship between deaths by suicide and uncertain suicides and



Fig. 1. Year of death by suicide compared with uncertain suicide + intoxication in the total series of alcoholics.

Table 2
Observed (O) and expected (E) deaths of assaultive ($n = 53$), suicidal ($n = 38$) and other ($n = 171$) male alcoholics by cause groups

Causes of death classified in accordance with ICD 8	Assaultive alcoholics			Suicidal alcoholics			Other alcoholics		
	O	E	O/E	O	E	O/E	O	E	O/E
Suicides	5	0.3	17	3	0.3	10	8	1.5	5
950-959									
Uncertain suicides, intoxications	5	0.1	50	4	0.0	100	21	0.3	9
850-877, 980-989									
Other alcohol-related deaths	8	0.8	10**	1	0.6	1.7	7	3.1	23
140-149, 150, 155, 291, 303, 345, 571,									
800-845, 880-949									
All other deaths	11	7.8	1.4	7	7.1	1.0	39	32.2	1.2
Total	29	8.9	3.3**	15	8.1	1.9*	64	37.0	1.7**

Poisson distribution

** $P < 0.01$

* $P < 0.05$

intoxications in the total series of alcoholics. There was no relationship between the different subgroups and time of death. The deaths were almost randomly distributed in time during the follow-up period. The suicide frequency was, however, somewhat higher during the first 10 years and the uncertain suicides and intoxications more frequent during the second decade. The difference must be interpreted cautiously because changes in diagnostic routines during the years could not be ruled out.

Convictions. The number and character of convictions during the follow-up period is presented in Table 3. Twenty-six per cent of the assaultive alcoholics were convicted during the follow-up period. Only 13 % were convicted for assault. No alcoholics were convicted for any severe crime of violence.

Disability pension and mean days of sickness benefit. Table 4 shows the frequency of disability pension and mean days of sickness benefit during 1979 and 1980 in the different subgroups of alcoholics born 1916 and later.

The frequency of disability pension was similar in the groups. The mean days of sickness benefit was somewhat higher in the assaultive group than in the other groups, but the figures were not significantly different.

Changes in marital status. Table 5 shows changes in marital status during the follow-up period among the survivors in the different subgroups. Significantly more married alcoholics in the assaultive group were divorced than in the other two groups. No unengaged assaultive alcoholics married during the follow-up period, while eight among the 31 unmarried other alcoholics became married.

Psychiatric treatment during the follow-up period. In Table 6 the different forms of psychiatric treatment given to the survivors during the follow-up period is analysed. The assaultive alcoholics had fewer out-patient treatment sessions, emergency visits and in-patient admissions at the Department of Psychiatry than the other groups. There were no differences in the number of admissions to the

Table 3

Convictions during the follow-up period among the survivors in the different subgroups

Number	Assaultive alcoholics 24 (%)	Suicidal alcoholics 23 (%)	Other alcoholics 107 (%)
Convictions			
assault	3 (13)	1 (4)	4 (4)
drunken driving	4 (17)	1 (4)	13 (12)
theft, fraud, etc.	4 (17)	2 (9)	14 (13)

Table 4

Disability pensions and mean days of sickness benefit (≥ 50 SKr)/year during 1979 and 1980 in assaultive, suicidal and other alcoholics born 1916 and later

Number	Assaultive alcoholics 19 (%)	Suicidal alcoholics 14 (%)	Other alcoholics 71 (%)
Disability pension	9 (47)	8 (57)	36 (49)
Partial pension, sickness benefit			
< 50 SKr	3 (16)	1 (7)	4 (5)
Sickness benefit ≥ 50 SKr	7 (37)	5 (36)	31 (42)
Mean days of sickness benefit			
≥ 50 SKr	87	48	37

mental hospital. Patients who had died during the follow-up period had a similar pattern of psychiatric treatment as the survivors. Exclusion of surviving patients who had moved out of the county (9 assaultive, 11 suicidal and 28 others) did not change the main results.

Discussion

Our main finding was that assaultive alcoholics differed in their long-term course from other alcoholics. The main difference in the assaultive group was the increased frequency of deaths from suicides and intoxications as well as from other alcohol-related disorders. The frequency of divorces was also increased compared with the other alcoholics, while there was no difference in the job situation or the frequency of disability pension. Somewhat surprisingly the assaultive group used the psychiatric services less than the remaining groups. Finally, convictions for assaultive behaviour were rare in all groups even if the frequency, as expected, was somewhat higher in the assaultive group.

The findings are probably reliable. The sample was divided into assaultive, suicidally inclined and others at the initial examination (3). There was no loss at the follow-up examination and there are no other important biases in the material.

The greatest future risk for assaultive alcoholics is premature death and not repeated assaultive behaviour. The increase in mortality was 3.3 times that of the general population. This is a very high increase in a long-term study. Salum (11) has reported similar figures for a group which had suffered from DT, but, in general, figures in the literature are 2.0–2.5 times the general population (8, 12–15).

The increased frequency of suicides and intoxications in the assaultive group was of the same magnitude as in the suicidally inclined alcoholic group. A positive association between assaultive and suicidal behaviour have previously been reported (16–19). However, as far as we know, no one has previously reported that in alcoholics the increased frequency of future suicides is similar in assaultive and suicidal behaviour.

Our finding of a decrease in assaultive be-

Table 5
Changes in marital status during the follow-up period among the survivors in the different subgroups

	Assaultive alcoholics	Suicidal alcoholics	Other alcoholics
Married → Divorced	9/15	6/15	11/60**
Unmarried → Married	0/6	2/4	8/31

χ^2 test for three independent samples.

** $P < 0.01$.

Table 6
Psychiatric treatment during the follow-up period among the survivors in the different subgroups

		Assaultive alcoholics ($n = 23$)	Suicidal alcoholics ($n = 22$)	Other alcoholics ($n = 103$)
Dept. of psychiatry	Outpatient treatment sessions	$4.7 \pm 4.2^{***}$	$14.1 \pm 17.2^*$	$16.2 \pm 22.0^{***}$
	Emergency visits	$1.0 \pm 1.9^{**}$	$1.8 \pm 1.7^*$	$6.2 \pm 14.6^{**/*}$
	Inpatient admissions	$0.8 \pm 0.7^{***}$	$2.6 \pm 3.1^*$	$2.2 \pm 3.4^{***}$
Mental hospital	Inpatient admissions	2.6 ± 6.9	3.2 ± 7.1	2.9 ± 6.8

t-test

*** $P < 0.001$

** $P < 0.01$

* $P < 0.05$

The hospital records of one assaultive alcoholic, one suicidal alcoholic and four alcoholics had disappeared.

behaviour is difficult to explain. It might, however, be an effect of age. Our alcoholics were, on average, 43 years old at the initial examination and it is a well known fact that criminality in general and also in the form of violent behaviour diminishes with advancing age (20). On the other hand, the declining social situation and the increase in cerebral dysfunction found in older age in alcoholism might increase the risk of assaultive behaviour.

In a previous study (3) the present assaultive group, the suicidally inclined group and the remaining alcoholic group were compared at the initial examination by means of a self-rating questionnaire. The suicidally inclined group was characterized by a broad spectrum of symptoms including paranoid, depressive and aggressive feelings as well as tiredness and irritability, while the assaultive group was composed of individuals who reported conspicuously few nervous complaints. The authors suggested that a neurotic-psychopathic personality continuum could explain their findings.

The results of our follow-up study support these initial findings. The increased frequency of suicides in the "psychopathic group", i.e. the assaultive group, could perhaps be explained by impaired control of impulsiveness typical of psychopathic behaviour (21). In a similar way the increased frequency of divorcees and perhaps also the low attendance to psychiatric out-patient services in the assaultive group could be explained by the psychopathic disturbance in the relationship to other significant persons (21).

To sum up: A skilled psychiatric evaluation of assaultive behaviour in alcoholism has an important predictive value. Continued assaultive behaviour was uncommon. Instead we found an impressively increased mortality rate compared with other alcoholics, caused both by suicide and intoxication as well as by other alcohol-related deaths.

Acknowledgement

Eva Skagert and Sonja Persson collected the data and prepared the manuscript. Supported by the Swedish Medical Research Council (grant 25X-05714).

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Key words: Drug career; follow-up; marginal conflict; opiate addicts; turning process.

Drug careers in perspective

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ABSTRACT – This paper reports the results of a 10-year follow-up of a pioneer group of 36 opiate addicts treated at a detoxification unit at St Lars Hospital in Lund in the years 1971–72. Sixteen of them are now ex-addicts. Their way out of addiction is described. The results show that there exists a turning process during which some kind of therapeutic action could be of considerable value. The ex-addicts go through a period in which they show signs of an identity conflict. During this period women seem more inclined to relapse than men. This stresses the importance of long-term therapeutic strategies.

Received June 23, 1982; accepted for publication November 28, 1982

It is well known that opiate addiction not necessarily implies lifelong illness. For example, according to Vaillant (1), more than a third of male heroin addicts in a sample from New York tended to mature out of their addiction, even after several years of compulsive abuse. In this investigation we want to find out if this is also true for Swedish opiate addicts. Opiate abuse among young street addicts was quite a fashion in southern Sweden at the beginning of the seventies. A pioneer group of 36 opiate addicts, all hospitalized at a detoxification unit at St Lars Hospital in Lund, has been closely followed up for 10 years. Sixteen of the addicts (9 men and 7 women), once deeply involved in drug addiction, now live a normal healthy life.

The paper describes the ex-addicts' way out of addiction and concentrates on what

happens during the process of de-addiction. There were differences between men and women in their ways of freeing themselves of the habit. Case stories relating the circumstances under which they stopped abusing drugs give useful information about the natural healing process and the kind of interventions that might be of help.

Material

Thirty-six opiate addicts (22 men and 14 women) applied for help and were hospitalized at a detoxification unit at St Lars Hospital in the years 1971–1972. For most of them, this short detoxification was only the first of a long series of detoxification and treatment periods. The average age at the first admission was 21.7

and 20.0 years for men and women respectively. Two-thirds described emotionally unstable family relationships with feelings of insecurity, and insufficient affection from their parents. Many of them were children from broken homes. Mental illness and advanced alcohol abuse within the family occurred in four and nine cases, respectively. Several patients described themselves as an 'appendage' to their parents. The uncertainty and insecurity they felt at home resulted in difficulties at school, such as apathy, school fatigue, irritation with teachers and school mates, and truancy. "When your experiences are only based on conflicts and you have never been accepted as you are, then you seek other young people in the same situation", said one of our young addicts. He had begun to use alcohol and drugs because "You get a sense of belonging to a community, life together is enjoyable". Others stated that they experimented with drugs out of pure curiosity. Most of them were so-called 'hippies'. They began trying out drugs in a group, they lived in groups and followed the will within the group without question.

All patients had abused haschisch since 1967, when it first appeared in southern Sweden. The price of opiates, since 1971 sold in the form of morphine base on the illegal market, was low and did not differ much from the prices of other drugs available – such as haschisch and amphetamines.

All patients in the sample had abused opiates intravenously at least 6 months prior to their hospitalization. Many of them were afraid and disconcerted by the severity of the symptoms of opiate abstinence, an entirely new experience for them. Fifteen had reached the so-called 'compulsory stage' of abuse while the others were still in the 'experimental' or 'adaptational' stages (2, 3, 4).

Methods

Patient data were collected by means of personal interviews, which included a structured questionnaire containing questions about pattern of drug abuse, social history, treatment experience and different aspects of the process of de-addiction. In addition, information was obtained from different official sources, such as the National Police Register, and the records of the National Insurance Office for certificates of illness and institutional care. Also, where appropriate, we used information from case records, outpatient records, and autopsy records. Key informants, data from relatives, probation officers and social workers were also collected for certain cases. Records concerning delinquents are very carefully kept by the social authorities, consequently, we had no difficulties in closely mapping the various case stories of the patients during the last 10 years.

Twenty-six of the 31 persons still alive responded to our requests for personal interviews.

Results

As expected, the mortality rate was high (5 out of 36 persons) (1, 5, 6). Fifteen of the 31 persons alive are still addicted, half of them are hard-core addicts, using opiates (nowadays heroin) daily, half of them are polydrug abusers. Some of them have spent most of their adult lives in jail. Sixteen persons (9 men and 7 women) are now, 10 years after their first admission, ex-addicts. There is a striking resemblance between the outcome of the patients belonging to this small sample and other follow-ups (1). The interviews revealed a life history or drug career resembling models described by Alksne et al. (2), Vaillant (1), Waldorf (7), Winick

(8), Gunne & Frykholm (3) and Frykholm (4) who supported them. The opiates available on the street were relatively cheap and none of the women were forced into prostitution. None had ever served a prison sentence, but three had been on probation. One woman with a total drug career of 11 years was sentenced to a prolonged imprisonment, which forced her to terminate her drug abuse (Case 2).

The following concentrates on the drug careers of the 16 ex-addicts.

Patterns of drug career in registers and records

Male ex-addicts. Of the nine males free from drugs, seven had a history of drug abuse of more than 6 years. All financed their drug abuse by committing a variety of criminal offences, and the majority had been sentenced to imprisonment. Frequently, they were admitted to hospital care and detoxification, and between hospital visits they usually lived as bums. Just as frequently, those who had been in therapeutic communities or family care relapsed shortly after discharge. One man had to leave a methadone maintenance treatment program after a year, having broken the rules of the program. When he was later treated in family care, he stopped abusing and was completely rehabilitated. Consequently, these men presented a relatively homogeneous picture of a long history of opiate abuse accompanied by criminality and imprisonment, recurrent hospital treatment and periods spent in therapeutic communities and family care. The two males with a shorter history of drug abuse showed a different pattern. While addicts, they were generally loners, were withdrawn and sensitive, with hardly any contact with other junkies. Their criminality was negligible as they only committed minor offences.

Female ex-addicts. All but one had short drug careers (in general 5–6 years) and had not been involved in criminal offences to any great extent. All earned their living either legally, through studies financed by study loans, or else had a boy-friend

In short, the greatest differences between men and women seem to be length of drug career and life-style during addiction period.

Today the 16 ex-addicts no longer have any criminal records and, according to insurance office records concerning certificates of illness and institutional care, are no more sick than the average Swede. They work or study, and most of them have growing families.

Turning process

Sooner or later the former addicts reached a stage where they began to question their habits. A combination of 'pushes' and 'pulls' (9) forced them into a kind of turning process. The drug histories of the former addicts varied from 2–14 years. Nine of them gave up their drug abuse suddenly; the other seven gradually overcame their addiction and abandoned opiates but abused amphetamines, haschisch or alcohol for varying periods. They described a maturing process during which they became aware of the consequences of continued abuse. They got tired of being street addicts and their existence became increasingly difficult: "I realized that my situation was precarious; I had to survive or die".

In the majority of cases, the feeling of having intrinsic values or increased self-confidence was associated with increased maturity and a change of attitude towards

drugs. Five men told us that they became acquainted with women who did not abuse drugs. Others had made friends with people without drug problems. Four stated that they gained self-respect and a sense of responsibility by being able to manage a job or studies. "My life got a new meaning through studying; my work gave me increased self-confidence and a feeling of responsibility and life didn't seem as bad as earlier". One woman had a baby which the social authorities threatened to take away from her if she continued with her abuse. Only one ex-addict mentioned institutional care as a contributory factor: "It may sound terrible, but it was a good thing to be locked up for such a long time". Professional support from outpatient clinics, however, was mentioned as being important.

The majority of the ex-addicts experienced this period as a personal crisis: "After having gone about in a daze for years, I became suddenly aware of my surroundings and was experiencing terrible nightmares".

At this point we refer to our data to find out whether there are any possibilities of observing when addicts enter a process of reversal, and whether there are any indications that some type of intervention and support might assist persons when they reach this stage? We will illustrate this with the case history of one male patient who seemed to be in the process of turning.

Case 1: male, born 1952

This patient was brought up in a home with serious family problems; as a consequence, he was placed in a foster home. At the age of 13, he began taking drugs and was addicted to opiates for a total of 7 years. He contended that the turning point of his life

occurred in connection with an LSD trip. During this trip he became clear-sighted, and realized how his whole life revolved around drugs. He felt as if everything he did or had done was connected with drugs. At the same time a very close friend died from an overdose. This event reinforced his desire to cease taking drugs. In order to do so he applied for treatment. Giving up opiates was only a part of the battle because in between treatment periods at the clinic he continued to live with friends who were addicted, and he smoked haschisch and drank heavily. Periodically, he had to be detoxified of alcohol. He was an inpatient at our clinic in periods varying from 1 week to several months. In between he began to study at a school in the neighbourhood. After 1 year he became an increasingly frequent visitor to our outpatient clinic. Periodically, he used legally prescribed tranquilizers, which he never abused.

When he first appeared at our unit he was very extrovert, easy-going and had many friends, but during the later period of treatment he became more and more introspective and depressed. He had frequent attacks of anxiety and developed hysterical symptoms, such as paralysis of both legs. He was also often afraid that some catastrophe would happen; for example, he was almost certain that a neighbouring nuclear power station was going to explode. On other occasions he held his head in his hands, having a sensation that 'the cerebral substance' was flowing away. He often got flashbacks, which he referred to his earlier LSD abuse. These symptoms did not last more than 1 or 2 hours. One symptom followed another and was seldom repeated more than once. Trained nurses occasionally regarded him as prepsychotic. However, in between these attacks he was aware that the symptoms were only signs of anxiety.

At the same time he was undergoing a period of intense change, both personally and socially. He was no longer as arrogant and negative as before in his attitude towards his surroundings. Instead, he began to admit his personal difficulties and accept the support

of the staff. He reacted strongly (when an inpatient) against the imprudence of younger abusers and tried to make them aware of the dangers of their drug habit. He realised he could never return to his old life-style. As a sign of his change of attitude he cut his hair and bought new clothes, and stopped wearing his necklace with a silver haschisch leave.

To sum up: the following seems to happen when addicts begin to mature out of their addiction:

1) They tire of their abuse and of their drug-orientated surroundings. For a long time they have had a series of negative experiences: somatic diseases such as hepatitis or other infections, unwanted drug effects, overdoses and panic reactions, and the euphoric effect of the drug decreases or disappears. They have often seen friends hurt or killed by drug abuse. They have lost contact with their family and drug-free friends. There are "too many policemen at the door".

2) They become more vulnerable and sensitive, at the same time they develop psychiatric symptoms such as anxiety, depression and even psychotic episodes. They begin to express their emotions and, accordingly, are more receptive to treatment.

3) A change of attitude is taking place: they seek help to a greater extent and are anxious to discuss their personal problems. They are more ready to listen to the staff's arguments and more inclined to query their own point of view. Gradually, they begin sharing the society's norms.

4) Paraphernalia belonging to the drug culture is got rid of. They change their way of dressing, and cut their hair. The

new style is a sign that they wish to lose the drug identity.

This development, often occurring over a period of years, could be called a turning process.

Re-entry stage

Several of the ex-addicts in our sample stated that coincident with the turning process they experienced increasing anxiety about the possibility of a relapse. They also described a stronger and stronger aversion to drugs. A number of them reported a strong feeling of having emerged from another world. They described themselves as having been "totally oppressed by drugs". After having been dragged down by drugs for so long they now began to develop both intellectually and emotionally. "You know, I had ten years to make up for".

After having given up their drug abuse, ex-addicts go through a long period during which they have difficulty in feeling at home in their new life. They are ambivalent towards their earlier life as well as towards the 'normal' way of life.

It often takes years before they are able to talk about their earlier life as addicts in a natural manner, they either romanticize or reject it: "After all, that life was exciting", or "I don't want to deny my experiences". However, at the same time they may say: "How the hell could I carry on as I did?" Sometimes ex-addicts express somewhat superior attitudes towards those people "who haven't experienced anything, who have only led a dull, mechanical life". They are now bent upon living such a life themselves and often despise their former friends who are still addicted; they want to dissociate from their earlier lives as addicts.

They often report that they feel insecure

and inadequate under the scrutiny of non-addicts. Many say they feel tense when others observe them, and are uncomfortable talking about their previous life and earlier drug habits. They do not know how people will react, and fear the worst. This makes them hypersensitive to criticism and causes many to feel they have nothing to say to 'normal people'. In time, such feelings could lead to feelings of persecution. This often prevents them from making friends with 'normal people'.

Some of the ex-addicts – at least during the first drug-free years – live in social isolation and have a feeling of being without identity. A woman, now aged 29, who has been free from drugs for 5 years, discusses here the difficulties she experienced trying to enter a non-addict environment: "After I had stopped using drugs I began working in an office. The rumour about my background and the fact that I was an ex-addict had spread among my colleagues. I observed that, when they were discussing parties where there had been some drinking, all conversation died down as soon as I entered the room. They were over-cautious. I felt strong enough to discuss the matter frankly with them and I had expected a normalization of the situation but instead it resulted in the contrary. Suddenly, they saw me as some kind of expert or lecturer and they asked me questions about my earlier life in a lively and curious way. Obviously, they enjoyed listening to all that I had experienced. They regarded my life as an exciting story. On my part, I felt still more exposed among them and I experienced again a feeling of alienation. However, I took courage and participated in a staff party. On that occasion, some of my colleagues got drunk and behaved badly. This incident helped me to narrow the gap between myself and my colleagues".

This quotation also illustrates the difficulties of the majority group in accepting an ex-addict who tries to become a member of the group.

The following case history illustrates how an identity conflict manifests itself in an increased vulnerability and difficulty in approaching and becoming more intimately acquainted with non-addicts.

Case 2: female, born 1952

This patient was addicted to morphine in the years 1970–1974. She lived with a criminal addict and immediately after her last admission she was sentenced to 12 months' imprisonment for drug offences. In connection with this sentence she abandoned opiates but continued to have bouts of drinking. She found that she had trouble meeting people unless drinking beer and she became a soft-core addict for some years. She was employed in a section within municipal administration and managed her job well. However, she found it hard to enjoy her leisure time in a meaningful way.

She divided her friends into two groups: people without an earlier history of addiction and people who took drugs but, above all, were criminals. She showed a superior attitude towards other addicts and criminals because she had succeeded in giving up hard drugs. She also tried to help people who were still addicted.

On one occasion, some years after she had given up drugs, she was involved in a criminal transaction. She assisted a drug pedlar and was arrested for a couple of days. Her motive was not the need for drugs but rather her fondness for wearing smart dresses and a desire to make money quickly. When she was kept in custody she was troubled by nightmares. She had dreams about injecting opiates. For some time afterwards she had attacks of anguish and depression and needed extensive psychiatric support. After this event she ceased all criminal activity. However, she still found it difficult to make

friends with people without a history of drug abuse. She was worried that they would despise and reject her if they found out that she had been an addict. She felt inferior because she had not experienced a normal youth; she had nothing to tell her friends about her teens. She also demonstrated immature personality traits, such as self-centredness and vanity, which were manifested in a constant preoccupation with her looks and people's reactions to her. Another trait was her sensitivity: if one of her acquaintances was sad about something, she was often convinced that it was her fault. At the same time she was sensitive to criticism and supposed that people were prejudiced against her because she was an ex-addict. These traits decreased after some years.

Retrospective experience of the terminated drug career

The majority of the ex-addicts in our sample showed symptoms of being in a 'margin conflict' (10) after having terminated their drug abuse. However, in the majority of cases, these symptoms were seen to disappear after some years. These ex-addicts no longer present any signs of their former addiction identity, nor the uncertainty they felt during the first drug-free years. A sign of this is that they can speak about their addiction time without difficulty. They neither romanticize nor pity themselves while talking about their former life.

When they describe their addiction years they do so in decidedly negative terms. They often speak of the feelings of hopelessness, of not being able to trust others in a world where neither friendship nor familiarity existed. "Life was miserable. There was no friendship. It was only a matter of getting the best contacts who could help you in the pursuit of drugs". A woman now employed in

the medical service, states that this period of her life had, after all, led to something constructive. "Now I can understand how hopeless my patients sometimes feel". They feel they have wasted several years of their lives. Many of them characterize their drug abuse as something that 'inhibited their own development in an effective way'. They describe themselves, while addicts, as egoistic, whining, apathetic and aggressive, paying no attention to anything but getting a new 'fix'. Moreover, they describe themselves as having been reserved and cut off from their surroundings during that period, and were most unreliable: "Everything else became unimportant to me. I did things I never would have dreamt of. I was emotionally empty".

Treatment during the turning process

As mentioned before, only one man cited institutional care or a stay in a therapeutic community as a contributory factor to the termination of his drug abuse. The others stressed 'pulls' (9), i.e. positive contacts or experiences that encouraged them to abandon their drug abuse, even if they were staying at some kind of institution during the turning process. Thus, they do not ascribe any positive effects of treatment but they often mention professional contact as an important support.

Although our patients did not attribute their improvement to any method of treatment, it appears that six out of the 16 patients (4 males and 2 females) were in therapeutic communities or in family care at the time of giving up drugs (Table 1). Three of the four men who had very long drug histories entered a therapeutic community after hospital treatment and imprisonment. One man, with a short

Table 1
Treatment of opiate addicts during the
turning process ($n = 16$)

Outpatient treatment	4
Approved school or imprisonment	4
Hospital care	3
Family care	3
Therapeutic community	1
No treatment	1

history of drug abuse, was admitted to hospital for a long period and was treated for anxiety and depression. Sometime later he also went to a therapeutic community. The two women received family care. Six of the remaining 10 patients (3 males, 3 females) had frequent contacts with outpatient clinics at the time of the termination of their drug abuse. One man was sentenced to institutional care after having served several prison sentences, and as a result he managed to stop taking drugs. A woman was sentenced to prolonged imprisonment that forced her to terminate her drug abuse. Another woman was placed in an approved school and the result was the same. To our knowledge, only one woman has given up drugs without treatment, i.e. since her last hospital visit she has had no contact with any unit. Immediately after her last admission she became a member of a religious community.

Discussion

It has been possible to follow a small pioneer group of Swedish opiate addicts for 10 years. The addicts' own stories about their life is in complete congruity with the data received from key informants and official registers. The addicts have a tendency to refer their healing out of drug addiction to what Brill (9) calls

'pulls', i.e. positive life events. Like other psychiatric patients, they do not seem to ascribe the fact that they are healthy today to treatment, although in reality they received treatment at a critical stage of their career.

The women seem to be more sensitive to external pressure and more receptive to treatment than men. Possibly because of this they seem to have a shorter career.

We have tried to elucidate the turning process and what Blomgren (10) calls the margin conflict, an identity crisis which occurs during recovery when ex-addicts attempt to move away from their subculture and ally themselves with non-addict groups. This process is of great interest and there is a need for further studies in this area.

Lastly, a practical conclusion is, that if drug addicts seek psychiatric help this may be a sign that they have reached a turning point in their drug career.

Conclusion

A pioneer group of 36 addicts, hospitalized 10 years ago at a detoxification unit, has been closely followed over the past years. Even if the sample is small the outcome has a striking resemblance to other follow-ups.

At the first follow-up, 1.5 years after the treatment period, the male addicts seemed to have a poor prognosis. At the second and third follow-ups many of them had improved and gradually matured out of their addiction. The female addicts had either given up their drug abuse at an earlier stage of their drug career, after some kind of intervention, or else they were still addicts. Thus, the women in our study seem more sensitive to external pressure and more receptive to therapeutic strategies than men. But

they also seem inclined to relapse after having been free from drugs for years. This pattern is well known from earlier investigations (11). The men, on the contrary, were firm and resistant in their attitude after having given up their drug habits.

When interviewed, the ex-addicts described undergoing a personal crisis during their efforts to cease their drug abuse. They became involved in a turning process, when they seemed to shed their addiction identities. During this period their feelings were split and they often had psychiatric symptoms. For a period of years the addicts are 'marginal men' (12). They are progressing from the drug subculture to a 'normal life', they are 'immigrants in their own country'. It is also clear that former addicts need support of varying intensity, often for years, on an outpatient basis.

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YOUNG FEMALE DRUG ADDICTS IN TREATMENT: A TWELVE YEAR PERSPECTIVE.

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A facility for treatment of young drug addicts in a hospital environment and the patients applying for detoxification and care over twelve years is the starting point of a series of observations concerning the characteristics of the female drug addicts and their career. These characteristics were found to be different from the male addicts in the hospital. Their short introductory period, their tendency to support a criminal addict by their habit and the high frequency of mental and physical illness characterizes the female drug addicts. Women drug addicts enter treatment earlier than men and have longer periods of abstinence in connection with treatment or childbearing. The women seem, however prone to relapses and need family and therapeutic support for considerable periods after the initial treatment period.

Background

The following study originates from a department for the treatment of drug addicts in Lund, a university town in southern Sweden. The facility consists of a ward for detoxification and short-term rehabilitation in a mental hospital and an out-patient clinic in the centre of the town. These units were opened in 1970 on the initiative of the social authorities, who at that time were very much concerned about how to take care of quite a new category of young drug addicts needing help. The detoxification unit with 14 beds and with good possibilities to provide qualified help in an unconventional way has since 1970 been a centre for detoxification in the Malmoe-Lund region and has had the same leadership all the time (K. Tunving and a group of staff-members). Even if some of those who apply for help are somewhat older and abuse sedatives, hypnotics and alcohol, the majority of the patients (at least three-fourths) from year to year are young street addicts with a needle habit, injecting stimulants or opiates.

There are many reasons behind one's applying for help in "our" ward. Often the addicts feel they have to go down to lower doses of opiates or to take a much-needed break during their addiction because of some kind of mental complaint or illness.

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Journal of Drug Issues, Inc. 0022-0426/85/03/367-382 \$1.00

They may have gotten complications arising from their abuse— e.g. bad trips, psychoses, depressions or have been rescued from overdoses. Or they may plan, after an initial detoxification, to go on to treatment for a longer period at one of the many different therapeutic communities or family homes for adults which have opened during the last ten years. It may be added that all treatment modalities are now drug-free. Before 1979 a few of the older heroinists (Andersson, 1981) could go to a methadone maintenance program. In that year, 1979, the only MMT-program in Sweden was closed.

The Treatment Program

The treatment program is strictly structured. There is a schedule of daily activities. Besides general medical treatment there are opportunities for individual counselling and all patients have to participate in group therapy. Members of the staff have psychiatric training. Generous conditions make it possible to let the addicts come for treatment as in-patients after one or two days of application. Admission to the facility is unselective— the need decides if you will be admitted to the ward. It might be added that the Swedish authorities are positive in their attitude to addicts seeking help. There is no need for addicts to be afraid of reprisals in connection with hospital care. It is this humane attitude which underlies the fact that many of the younger Swedish drug addicts with a needle habit, according to an investigation in Gothenburg by Holmberg (1981), at some time or another enter a hospital for treatment. The fact that the ward admission criteria have not changed during the years represents some kind of guarantee that we receive a cross-section of the street addicts intermittently wanting hospital care.

The distribution among men and women applying for treatment is invariably the same from year to year, namely 70% men and 30% women. In other Scandinavian studies from similar facilities for treatment of drug addicts the sex distribution is about the same. Haastrup (1981) mentions the proportions 68% men and 32% women in his sample of drug addicts from Copenhagen and Ramström and Lindeberg (1977) state that the distribution between the sexes in a Stockholm sample is 67% men and 33% women.

When addicts come to the ward at the hospital in Lund they undergo a medical examination and every patient gets a case record. Urine samples are sent to the laboratory for analysis. Diagnoses of addiction are based on the reports, on demonstrable marks on the arms after injections and on the result of urine analysis. The patients usually stay in the hospital for a period ranging from a few days up to one year, although the longer stay is rare. The average time is 3–4 weeks. There is a tendency toward women staying for somewhat longer periods than men.

Illicit Drugs on the Black Market

The occurrence of different illicit drugs on the black market might be illustrated by the diagnoses of admission to the ward (Figure 1). We believe that the habits of our patients must be a reflection of what is going on in the streets. Briefly, popular drugs on the black market since just before 1960 have been stimulants, most often pure amphetamine. Around 1967 and 1968 the hippie movement reached Sweden and a lot of teenagers began to take an interest in drugs like cannabis and hallucinogens such as LSD and mescaline. Students and

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young people from the middle class began to smoke strong hashish, sold illegally on the streets. When the hippie movement died, some teenagers got more deeply involved in drugs, others stopped abusing at an experimental stage.

As morphine base, an impure product of raw opium, was smuggled into the country, some of the former hippies used to injecting stimulants periodically, became opiate addicts at the beginning of the seventies. To begin with, morphine base was cheap but very soon the traffic and trade in opiates came to be a very lucrative business. Heroin was introduced in the summer of 1974 in Malmö (Tunving, 1976) where young inexperienced hashish smokers were taught to smoke heroin using the "chasing the dragon" technique. Morphine base and other opiates gradually vanished from the black market. According to the police authorities in the region, several hundreds of hashish smokers became heroinists in one summer — 1974. The "older" opiate abusers, often with reluctance, had to use heroin in periods when this was the only opiate form available on the street.

Since 1975 the Swedish illicit market has an international character—the drug scene is about the same as in other cities in Western Europe. But there is still access to illicit powdered amphetamine on the market for injection purposes. There is hardly any cocaine. The illicit market in the cities of southern Sweden is a "common market" with that of Copenhagen, so close that many of the drug addicts in the region commute to the Danish capital where the prices of narcotics are lower.

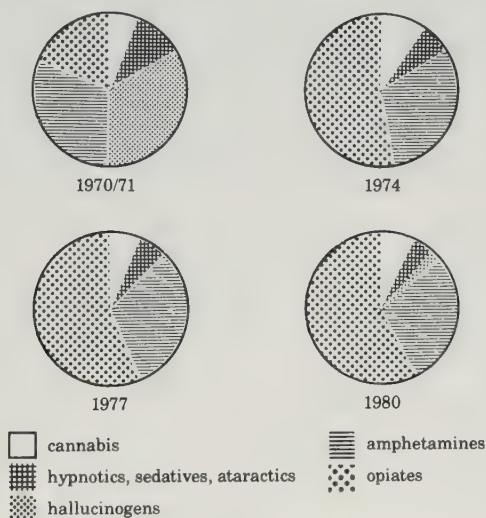


Figure 1. Change in abuse diagnoses of patients, 1970–1980.

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Investigated Samples of Drug Addicts

The purpose of this study is to analyse and illustrate the characteristics of female drug addicts during different periods of treatment at a detoxification and rehabilitation unit. The female addicts often stay at the ward for months. Sometimes they may be under pressure to accept treatment from the social authorities, or they may, more or less, have serious somatic illnesses which have to be cured over a period of weeks. They often seem to feel at home at the ward. Because the facility is located in a psychiatric unit the patients are sheltered by all the written and unwritten rules of the hospital. No one but relatives are allowed to visit the ward. Pimps and other unwanted visitors do not come. One of the reasons for staying at the ward might also be that the female nurses belonging to the staff seem especially good at taking care of and restoring the human dignity of the women in treatment.

For more than a decade it has been possible to follow the life cycles of generations of drug addicts passing through the ward in Lund. In three investigations over different periods from 1971–1983 we have tried to illustrate the situation of the drug addicts. The present review concerns mainly female drug addicts. The samples have been collected consecutively.

A) A pioneer group of 14 women opiate addicts (total group 36) collected 1971–1972 which has been followed closely for ten years by Andersson, Nilsson and Tunving (1983).

B) A sample of 47 young female heroin abusers (total group 138) from 1975–1977. The analysis of the sample illustrated the characteristics of the female drug addicts and gave some aspects of their drug careers. (Andersson, Fridell, Nilsson and Tunving, in press 1984).

C) The morbidity of female drug addicts from 1971–1972 ($n = 53$) and 1981–1982 ($n = 48$) has been the subject of an investigation by Tunving (1983). All women admitted to the ward during the years mentioned are included in the samples. Dominating illegal drugs were opiates (38% and 50% respectively), stimulants (30% and 35% respectively) and polydrug abuse (barbiturates, tranquillizers, cannabis, alcohol and hallucinogens) (32% and 15% respectively).

I. 1971–1972. Female Drug Addicts Treated 1971–1972—Former Hippies, Getting More Deeply Involved in Abuse of Illicit Drugs

The drug addicts admitted to the ward before 1975 were in a way "lucky." They could be sure of getting a job or an education the day they wanted to break their drug habit. The markets in Sweden were improving at that time, the rate of employment was high and the economy expanding. A series of social security reforms were accomplished. If they wanted to continue abusing drugs after treatment, the cost of illicit drugs was low. Friendship dominated the scene. Male addicts often committed the crimes and took the risk of going to prison; the female addicts, according to the rules of the society, were sheltered, "decent" women, and spent their lives as housewives. They assisted in packing the drugs in small envelopes for sale, or were engaged in some shoplifting.

A pilot study of 14 women opiate addicts (sample A).

Some of the women suffering from abuse of morphine base treated in 1971–1972 belonged to a pioneer group of opiate addicts, a sample of 36 patients (14 women and 22 men). This means that 14 of the 53 women, treated in 1971–1972 and

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belonging to sample C, happened to be members of the pilot study mentioned and have been followed closely for ten years (Andersson, Nilsson and Tunving, 1983). They have been interviewed at intervals and data have been collected from records. The women (mean age when entering treatment 20 years) began to abuse drugs during adolescence. Although the sample is small, we could discern certain traits or characteristics belonging to their drug careers.

The women—more than the men in the sample—seemed especially sensitive to threats of being involuntarily committed to treatment in institutions for young delinquents, or to threats from the social authorities of their children being taken into care. These threats often made them try to abstain from drugs. Even if the women abused drugs they seemed for periods capable of living an almost normal family life. Six of the 14 women abstained totally from drugs after less than six years of abuse. The six ex-addicts were never sentenced to imprisonment. One woman later abstained from drugs. She had a drug career longer than the others and gradually matured out of drug addiction as described by Winick (1964), Alksne et al. (1967) and Waldorf (1973). Nine men (of 22) in our pilot study also followed this pattern. They became abstinent by means of a series of "pushes and pulls" and were stable ex-addicts at the 10-year follow-up.

The women who did not give up drugs very early in their career, seemed to have a tendency to relapse, sometimes after years of abstinence. The relapses often occurred when they made the acquaintance of still addicted men. They seemed to alternate easily between an ordinary life and the life of the drug subculture. These findings are in accordance with those of Gerstein, Judd and Rovner (1979) who stress the women's greater "permeability" between an ordinary life and the life of an addict. As the women often had children, they let someone else take care of them for a weekend or a Saturday night when they used drugs. But sometimes the relapses could go on for a period full of hazards.

The result of the 10-year follow-up, to sum up, was: Three women and two men ($n = 5$) had died of an overdose, seven women and nine men ($n = 16$) were ex-addicts, four women and eleven men ($n = 15$) were still on drugs.

Further investigations

In the following studies we wanted to see if the observations in the pilot study could be replicated. We also wanted to go on studying the drug careers of the female addicts often repeatedly admitted to "our" ward, as we came to suppose that their careers were different from that of the male drug addicts (Winick 1964, Alksne et al 1967). From a clinical point of view the women addicts seemed to have a high morbidity and excess mortality. The records of our samples might give us some further informations about the medical sequels of drug addiction among our female patients. In the following, the observations are arranged in chronological order.

The morbidity of female drug addicts treated 1971–1972 (Sample C).

There is no information in the medical records of the female drug addicts ($n = 53$, mean age 23.5 years) treated in 1971–1972 of their needing to have become prostitutes in order to get money to buy drugs. They gave the impression of leading a fairly sheltered life. Only three of the women (Table 1) reported that they had been battered. With these exceptions there was no anamnestic information that the patients had been exposed to violence.

Fifteen (28%) had no medical complaints whatsoever. Seventeen (32%) had had hepatitis B without complications early in their careers as addicts. (It is well-

known (Tunving, 1983) that about half of the addicts get symptoms of hepatitis B and that they often catch the infection when they start to use a needle for injections). Fourteen (26%) had had gynecological complications and infections.

But the women seeking care in 1971-1972 were mentally frail. Twelve (23%) had tried to commit suicide, 10 (19%) had toxic reactions or flash-backs, 3 (6%) had

Table I. (*Sample C*) Illness in women treated consecutively in 1971/72 and 1981/82.

	Period 1971/72 (N = 53)	Period 1981/82 (N = 48)
Period of treatment	mean 37 days range 2-403 days	mean 21 days range 2-187 days
Number of admissions	mean 2 range 1-6	mean 2 range 1-9
Mean age	23.5 years range 16-47	24.8 years range 16-59
Number of patients		
Leading drugs*		
opiates	20 (38%)	24 (50%)
stimulants	16 (30%)	17 (35%)
cannabis, tranquillizers, barbiturates, hallucinogens	17 (32%)	7 (15%)
No complaints	15 (28%)	5 (10%)
Hepatitis	17 (32%)	18 (38%)
Pneumonia	—	8 (17%)
Skin infections	3 (6%)	18 (38%)
Sepsis	—	2 (4%)
Gynecological infections and complications	14 (26%)	25 (52%)
Overdoses	7 (13%)	10 (21%)
Suicide attempts	12 (23%)	11 (23%)
Anxiety reactions, depressions, toxic psychoses and (for the first period) adverse reactions	22 (42%)	13 (27%)
Epileptic seizures	4 (8%)	5 (10%)
Accidents:**		
fractures	4 (8%)	8 (17%)
battered, assaulted	3 (6%)	11 (23%)

* 20% in each sample also had alcohol problems

** One person is only mentioned once under this heading

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symptoms of toxic psychosis, 7 (13%) had depressions and 3 (6%) had symptoms of major mental disorders. A total of 22 (42%) had psychiatric symptoms. This was presumably partly a consequence of an often intense abuse of cannabis or LSD, drugs of fashion during 1971–1972.

There are no Scandinavian investigations of the morbidity of female drug addicts. In one study Tucker (1979) showed that 75% of female addicts entering drug treatment reported having health problems, compared with 41% in a non-addicted group of women and compared with 58% of addicted men. Andersen (1980) found that 43% of female drug addicts entering treatment had gynecological problems. Densen-Gerber et al. (1972) pointed out that frequent sexual activity, lax methods of birth control and unexpected pregnancies increased the risk of physical complications among young female drug addicts. The fact that female drug addicts are often self-destructive and that they are likely to make suicide attempts has also been stressed by other investigators (Saxon et al., 1980).

To sum up: the female drug addicts treated in 1971–1972, all heavy abusers of opiates, stimulants, or polydrug abusers, and with a mean age of 23.5 years, were mentally frail but led a fairly sheltered life and were not in general exposed to violence. They got infectious diseases of a temporary nature. The sample will be compared later with the sample collected in 1981–1982.

II. 1975–1977. A Sample of 47 Young Female Addicts With a Habit of Abusing Heroin Treated in 1975–1977 ("The First Heroinists") (Sample B)

The "idyllic" period ended in 1974 when heroin came on the scene. Heroin was introduced when cheap "brown sugar" containing heroin was sold to hashish smokers who learned the so-called "chasing the dragon" technique, i.e., heating the brown grains and inhaling the smoke from them and in this way getting fumes of heroin. Those who became addicted to heroin soon acquired a daily habit which would cost them several thousand Swedish crowns a day. The crime rate increased steeply. More violence among the addicts themselves became common. The former friendly atmosphere of the subculture disappeared. "The law of the jungle" became the rule.

Women who came for treatment at the facility after 1975 were, like the men, "loners." They had to support themselves and their habit either by criminality (30–40%) or prostitution (60–70%). Often they had to support a "protector" or a pimp and give him pocket money for drugs. Sometimes the women were helped to the ward and treatment by a 50–60-year old man, a so-called "uncle," a protector who would let the woman and her customers use his flat. These older men often seemed to be semi-criminal themselves. If a male and a female addict of roughly the same age formed a relationship as a couple this was seldom because of friendship or love as it had been before—it was rather because it was easier to survive on the streets if there were two of them. (One instance of such "collaboration" was one of the female addicts, a prostitute, whose partner was a skillful professional thief. When she was in bed with her client, her partner, who as a matter of course had his place under the bed, cleaned out the client's pockets and wallet.)

1975–1977 was a transitional period between the "good old days" and the "new hard times." Data were collected consecutively about all the drug addicts with an intravenous habit who came for treatment to the facility in these years and who stated that they had abused heroin (Andersson, Fridell, Nilsson and Tunving,

1984). The population, the first heroinists, comprised 138 people, 47 women and 91 men. Thirty-eight per cent of them had been treated on some occasion prior to 1975. The others were addicts previously unknown to us. An analysis of the sample revealed, as might be expected, that drug abusers were now also being recruited from the middle and upper classes. The same phenomenon has been described from San Francisco, U.S.A., from the beginning of the seventies by D. Smith (1972). Some of the new heroin addicts were in very good material circumstances and had a good education.

In analysing the sample we wanted to study if there were any differences between the men and the women as regards their background, their way of abusing drugs and their behaviour while in treatment.

Background (Table 2)

The patients, 47 women with a mean age of 22 and 91 men with a mean age of 24, came from all classes of society. Only 55% came from complete or intact families. The remainder had grown up in broken homes, foster homes or in institutions. The dividing-line between a secure and an insecure childhood, however, did not seem to run where the family was intact or not. Frequently the interviewees stated that they had lacked a secure and stable contact with adults during their formative years. Abuse of alcohol, primarily, but also of tranquilizers and barbiturates was common (38%) in the patients' families. Mental illness in the immediate family occurred in 12% of the cases. In our sample we cannot see any statistically significant differences between the sexes. Approximately speaking, at least a third of the addicts have had a troublesome childhood and adolescence. (There is a tendency for women—somewhat more often than men—to come from broken homes, but this fact is not statistically significant).

There were, then, plenty of data about mental and addiction problems in the drug addicts' families of origin. These findings agree with Chein et al. (1964) who, in their by now classic study, compared social and familial background among drug addicts with that of others and found significantly more problems and disturbances in the addicts' families. Moise et al. (1982) maintained that female addicts have even more problems in their background than men. A high incidence of childhood personal trauma has been reported among opiate-dependent women by Aron (1975) and Benward and Densen-Gerber (1975). Data collected by a Women's Drug Research Project (Binion, 1979) suggested, however, only minor

Table II. (Sample B) "The First Heroinists."

Background, women and men. (N = 138: 47 women and 91 men).

Upbringing in broken homes, institutions, foster homes	45 per cent
Significant members of the family were alcohol addicts or had some other form of abuse	38
Psychiatric illness among parents or siblings	12
Not fulfilled education in compulsory school	25
Training or education after compulsory school	22
Able to work > one year before admission to hospital	27

No differences of statistical significance between the sexes.

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differences in family background between addicted men and women from the same geographical area.

Three quarters of the addicts in the sample had completed their compulsory school education and a quarter had some kind of training beyond secondary school. Twenty-seven per cent had once worked more than one year at a time in some employment, 39% had been employed for shorter periods and 34% had no experience at all of gainful employment: after leaving school they had immediately adopted a deviant lifestyle abusing drugs full-time.

History of Addiction (Table 3)

According to the medical records both men and women in our sample started abusing drugs at about the same age (14–15 years of age). When female drug addicts were admitted to the ward for treatment for the first time, they were on average two years younger than the males. However, they were abusing drugs just as heavily as the men. All were intravenous addicts. The female addicts thus seemed to have a shorter introductory period. Sometimes they had become intravenous addicts directly in connection with getting to know a partner who was an intravenous addict himself.

Moreover, the investigation shows that men often seemed to lead the way in experimenting with drugs. For example, only a small percentage (5%) of the women smoked heroin to begin with as against 22% among men ($p = .05$). We also got the impression that there was a greater inconsistency in the choice of drugs among women. Sometimes they switched drugs when they changed partners. But if you asked them about their favourite drug, they "stuck to" drugs that were "older" on the illegal market than heroin. Thus they seemed to be more traditional in their choice of drugs.

Female addicts also abused tranquillizers and barbiturates in addition to illegal drugs. Men are likely to make the expensive drugs go farther by using alcohol and cannabis. The fact that women are more inclined to use prescription drugs has been established previously by Abelson et al. (1973). Cooperstock (1971) and Wesson and Smith (1977) have linked this habit to the fact that female addicts often feel ill and depressed and that it is easy for them to consult a doctor about their emotional problems and receive prescriptions.

Mating and Child-Bearing

Female addicts seldom (9%) had a non-addicted partner. Usually they stated that they had a partner who also had a habit that they had to help support. In as many as 61% of the cases their partner was a criminal, drug-addicted man, often more run down than they were. The women seemed to buy protection in the harsh and criminal street environment. On the other hand, the men had a non-addicted woman as a partner twice as often or in 20% of the cases. Or else they (in 50% of the cases) had no partner at all. The only corresponding report we have been able to find is one by Ryan and Moise (1979) who in a study established that only 7% of the female addicts in their sample—drawn from a treatment centre for addicts—were living with a non-addicted man.

Thirty-one per cent of the women in our sample had one or several children, children that they could not usually take care of themselves. One interesting fact is that the women who had borne children had to a significantly higher degree abstained from drugs for periods of at least 1.5 years. This confirms our hypothesis that women who are into compulsive drug abuse try to refrain from taking drugs

Table III. (Sample B) History of addiction.
Heroin addicts treated 1975-1977. (N = 138)

	WOMEN (N = 47)	MEN (N = 91)	SIGNIFICANCE
Introduction to drug abuse, mean age	14-15 years	14-15 years	
History of experimental use of heroin (smoking)	5%	22%	p = .05
Leading drugs:			
heroin	17%	38%	
morphine (if available on the illegal market)	65%	54%	
amphetamines	17%	6%	
Drugs often added to the list:			
tranquillizers, barbiturates	++	+	
cannabis		++	
alcohol	+	++	
"Working alone"	30%	50%	
Partner = a criminal drug addict	61%	30%	
A legal partner	9%	20%	
No children	30%	48%	
One or more children	71%	52%	
Mean age of first treatment at the ward	22 years	24 years	
Mean period of abuse before treatment (related to age):			
6 years	55%	35%	
7-8 years	26%	26%	
> 8 years	19%	39%	
Number of admissions to the ward during and before the observation period:			
1-7	64%	100%	
> 8	36%	0%	p = .01
Somatic illness linked to abuse:			
Outpatient treatment	14%	20%	
Inpatient treatment	43%	35%	
Abstinent periods (often in connection with treatment):			
periods > 1.5 years	29%	13%	p = .05
Once or several times sentenced to being on probation	42%	72%	
Imprisonment for periods	22%	44%	

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during pregnancy and the period immediately following the birth of a child. Abstinence means a continuous period of abstinence of at least 1.5 years' length. Nineteen per cent of the patients had at least one such period; women had a drug-free period in 29% and men in 13% of the cases, the difference being statistically significant ($p = .05$). The women had "acquired" their abstinence periods during treatment or childbearing, the men while in prison.

The Attitude of Female Addicts to Treatment

We found that women entered treatment at an earlier age than men. The mean period of abuse before admission to a hospital was consequently shorter. Fifty-five per cent of the women had been abusers of drugs for less than six years, compared with 35% of the men, and only 19% had abused drugs more than eight years compared with 39% of the male addicts (Table 3). One third of the sample (45% of the women and 28% of the men) had been treated in therapeutic communities, psychiatric clinics or institutions for young delinquents before they were admitted to "our" ward. Twenty-eight per cent of the female addicts came back for treatment eight or more times before and during the observation period, which is significantly more often than the male addicts did.

There might be several reasons for this sex difference. The social authorities might be more concerned about female drug addicts and persuade them to accept treatment. Illness might bring them to the hospital. Relapses into heavy drug abuse seemed to bring them back to a point where they once again needed help.

As Waldorf (1973) pointed out, the addict alternates in his/her career between periods of seeking treatment, undergoing treatment and trying to live an ordinary life, and periods of imprisonment. In this sample the male addicts, who were an average of two years older, went to prison twice as often as the female addicts. The males were also sentenced to probation twice as often as the females. Even if the differences were small, we could distinguish a tendency toward imprisonment of male addicts earlier in their drug career.

As in earlier studies (File et al. 1974), the women addicts in our sample supported themselves primarily by prostitution or shop-lifting. Sometimes the female addicts in the sample assisted by taking care of narcotic business. Even if they were criminal, they were very seldom condemned to long imprisonments. The male addicts were generally more deeply involved in criminal affairs.

An analysis of the sample collected in 1975-1977 indicates, as we presumed, that it is women who most easily slip in and out of conventional or addict roles. In fact they seem to alternate between these roles for long periods. Their addiction is consequently characterized by a number of visible relapses. In our sample some of the women could be abstinent for years and then—during a life crisis or when they got acquainted with an addicted partner or for reasons unknown—they started on an advanced intravenous habit again.

III. 1981-1982. Studies on Female Morbidity (Sample C)

Some of the women addicts ($n = 48$, mean age 24.8) who came for treatment at the ward in 1981-1982 were generally in very poor straits from a socio/medical perspective. They lived in very harsh environments. Most of them (70%) were prostitutes. While in the rest of the society there has been an increase in equality between the sexes, the contrary seems to be the case among drug addicts. The women are despised and held in contempt; they seem to have no peace except

possibly in the ward with its closed doors behind which they appear to relax and submit to treatment for shorter or longer periods.

The women who sought help from 1981–1982 were somewhat older than those who did so ten years earlier (Table 1). (It should be mentioned that none of the women treated in 1971–1972 were admitted to treatment in 1981–1982, thus a completely new generation of addicts had evolved). Eighty per cent of the female drug addicts treated in 81–82 were intravenous addicts. The principal drug in 50% of the cases was opiates (heroin). In 35% of the cases stimulants and in 15% of the cases cannabis, tranquilizers, barbiturates and hallucinogens were involved. The mean period of treatment was 21 days, which was shorter than the period of treatment ten years earlier.

From table 1 it can be seen that only 10% of the women treated in 1981–1982 were healthy. Hepatitis, overdoses, suicide attempts and epileptic seizures occurred in about the same amount in the records of both samples. Psychiatric symptoms were even more common in 1971–72, a period when many abused LSD and had "bad trips."

From 1981–1982 the women reported a number of somatic complications. Boils, abscesses, gynecological infections and body injuries appeared to be an everyday occurrence with female addicts. It may be noted that the same women might have had several diseases and may consequently be included under different headings. It is very noticeable that women from 1981–1982 had been maltreated more often than a similar group ten years ago. Twenty-three per cent of the women had been battered or assaulted. One of them had been beaten by a customer—a ruptured spleen was the result. Another prostitute was almost strangled.

Accidents were common (17%). (Note that no woman appears more than once under the heading of accidents, fractures, battered, assaulted). One of the patients got a crush syndrome after a heroin overdose: her right arm is still partly paralyzed. One of the women was involved in a fire and lost three fingers and two toes. A total number of 19 individuals (40%) reported that they had been battered or assaulted or involved in accidents. The morbidity among the women treated in 1981–1982 seems to be higher than among the women treated ten years earlier. Social conditions have changed. Nowadays 70% of the female drug addicts lead a harsh life as prostitutes. The high morbidity from 1981–1982 must be a result not only of their addiction but also of their terrible social situations.

Some Clinical Observations

Parallel with these observations we have noted (1981–1982) that the female drug addicts in treatment at the hospital ward often seem passive and depressed and, at the same time, cut off. The young women often pair off on the ward. One can observe how they decorate the room they share as girls in their early teens do with ribbons and hearts, horoscope sheets, etc. They often close the door, giggle and talk "heart to heart" with each other. The teenage girl role the addict left behind at the age of 15 when she took up her deviant lifestyle is apparently not far away. When the young women leave their room to take part in the wider social life of the group they adopt a timid, passive and very traditional sex role. In group settings they are reserved, taciturn and shy. They wait on "strong" male addicts and wash clothes for them. In trying to know the female patients better, the therapist often feels disappointed. After lengthy periods of treatment, they often open up and show their insecurity, their poor self-confidence and their intense

need for help. Then they are often much more docile and gentler in treatment than the men. But it seems difficult to evoke in them a forceful determination to give up drugs. The female addicts described here in treatment, seem so often to submit and accept an adverse fate in passivity and helplessness; in other words they seem to have a very poorly developed feeling that they themselves could direct their own lives. The image they give in the ward is, of course, quite different from the one they presumably give on the street. To illustrate the obvious and profound split in personality we should like to cite one of our patients, standing and looking in a mirror on one of the walls of "our" ward: "Just tell me, who am I? Am I the person struggling to get hold of drugs on the street, the 15-year old girl from "when-it-all-started" or the abstinent person looking in the mirror now?"

Mortality (Sample B)

It is well known (Vaillant 1973, Haastrup 1973) that drug addicts have a high excess mortality. Out of Haastrup's Danish sample 2% of the drug addicts died every year. The mortality of sample B, "the first heroinists" from 1975–1977, has been followed up through official records to 1983 (eight years). Twenty-two persons (6 women and 16 men), all of them heroin addicts, died during this period and the cause of death was, in most cases, intoxication by heroin and/or sedatives and alcohol. Seven men and one woman committed suicide; one woman was presumably murdered. No one died a natural death. The mortality rate per year for female drug addicts in the sample was 1.6% and correspondingly 2.1% per year for male drug addicts. Mean age at death was 23.7 years for women (range 21–29 years) and 26.1 for men (range 22–40 years). The women died shortly after their first admission to the hospital. A British report by Pierce James (1967) that male opiate addicts might have a death rate three times as high as female opiate addicts cannot be confirmed.

Conclusions

We have the following composite of female drug addicts who come for treatment in our region:

In approximately one-third of the cases, and as often as the male addicts, they have had an insecure childhood. There has often been mental illness or abuse of alcohol by parents or other close relations. At 14–15 years of age they are drawn by curiosity into the subculture and learn to use narcotics from older men usually. They leave it to the male addicts to experiment with new drugs when they come on the market and keep to older and better-known drugs themselves. The introductory phase of drug use is usually short. Female addicts may fall directly into an intravenous habit with their male partner. When the women drug addicts seek treatment at our ward the first time they are, on average, 22 years old and always two years younger than the men applying for treatment at the same time. However, they are as deeply into an intense habit as the men are. In other words, they probably develop a compulsive addiction more rapidly than men.

The women are sensitive to pressure from the social authorities and they come for treatment fairly early. Many of the women are mentally unstable and depression and suicide attempts occur in about 23% of the cases. Physical illness is common. But since women constantly apply for treatment they have long (longer than 1.5 years) abstinent periods to a greater extent than men. This is true particularly of women who have borne children. The drug career may be short for

women, less than six years. It may however be much longer and we have seen relapses come after years of abstinence. Women seem to have a greater permeability between an ordinary conventional life and an addict's life. It is difficult to envisage that women in the same strongminded way as men sometimes can become ex-addicts. We believe consequently, that for long periods women addicts are prone to relapse and that they are in need of long-term individual therapy and familial support.

However, it seems that personality development of female drug addicts has been interrupted by the early start of drug abuse and prostitution. The most obvious psychological characteristics are splitting personalities, denial, passivity and submission. It is difficult to envisage how women who have been marked so early by a life of drug addiction and degradation because of their prostitution would be able to break away from their habits. Women drug addicts seldom or never have a healthy, non-addicted partner to support them; instead they generally support a criminal male, who is even deeper into addiction, by their habit.

A follow-up in 1983 of young female addicts still includes only registered data. These data give definite figures for mortality. Out of a sample of 138 drug addicts investigated in 1976 (mid year), 22 persons (6 women and 16 men) have died at an early age. This means that every year 2% (2.1% of the men and 1.6% of the women) of the original cases have died as a result of their addiction.

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Fatal outcome in drug addiction

by

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Abstract:

A sample of 524 young drug addicts consecutively treated at a special hospital ward has been followed by registers for on average ten years. Totally 62 were found to have died drug-related deaths at an average age of 27,5 years; 19 of them had committed suicide. Representativeness of the sample is investigated.

Background data at first admittance for the deceased and the living were compared. Sex and choice of drugs were predictive factors behind the fatal out-come: opiate addicts died 5,4 times and the amphetamine abusers 2,5 times as often as expected respectively. Males were exposed to greater risk than the females. It was possible to find a suicide-prone profile among the addicts, as those, who later on committed suicide, in a significant high degree had a hereditary disposition for mental disturbances, especially affective disorders.

Postmortem findings are discussed. Killing substances proved to be opiates, barbiturates and alcohol and/or other psychotropic substances. Signs of heart disease were often found in the overdose cases. By an integration of prospective and retrospective data it was possible to establish at what stage of the drug career the addicts had died. Most of them were in a compulsive stage of abuse. But some were abstaining or trying to abstain from drugs. A critical period seems to be at 26-28 years of age, a period when the abuse seems to be most intense and compulsive, the suicide risk is high and the efforts to abstain from drugs most serious and hazardous.

Key words: Abuse, drug addiction, amphetamine, drug career, longitudinal study, mortality, opiates, suicide, violent death.

Acknowledgment: The present study has been supported by The Swedish Ministry of Health and Social Affairs, Commission for Social Research (grant 83146) and by the Craaford Foundation. Appreciation is expressed to Marie Bergström and Lars Erdegård for their help in collecting data and assisting with statistical analysis. Peter Krantz, M.D., assisted as forensic expert. Sonja Persson and Ulla Persson prepared the manuscript.

That addiction to drugs, especially opiates, increases the likelihood of a premature death was clear from the beginning of the modern epidemic of abuse of narcotics. The amount of drug related deaths reported in a certain area or population is a constant sequence of the epidemic and is looked upon as an indicator of the intensity and extension of it (1,2).

According to G.E. Vaillant (3) who studied the excess mortality among a sample of opiate addicts during a twenty year follow-up, 1% of the original sample died every year. Other authors (4,5) have reported that 1.5-2 % per year died during the first years after treatment.

In Scandinavia there has - just as in other European countries - since 1970 been access to cannabis, morphine derivatives and heroin on the illegal market. In addition there has from 1960 and on been a habit among drug addicts in Sweden and to a less extent in Norway to inject amphetamine derivatives intravenously (6,7).

In Haastrup's (8) sample of 300 young opiate addicts from Copenhagen, collected in 1973 and followed up to 1984, 2,3 % died every year, a rate similar to international experience. There is a lower mortality rate reported among samples of amphetamine abusers followed up in Swedish studies: 0.8 % (9), 1.0 % and 1.6 % (10,11) per year, respectively. In addicts with a mixed abuse frequencies of 1.3-2.0 % per year have been reported from Norway (12,13,14). The mortality rate was increased 2.4-6.9 times in men and 1.3-7.9 times in women belonging to selected samples of addicts with a mixed abuse in Gothenburg (15). There is still no follow-up from Sweden specially investigating the mortality among opiate addicts. But in an investigation from 1980 Frykholm (16) compared the prognosis of amphetamine abusers with that of opiate addicts and was

able to demonstrate that twice as many opiate addicts as amphetamine abusers had died three years after treatment.

According to a report published by the National Board of Health and Welfare (17) who studied the mortality among all drug addicts, treated during 1973 in Swedish mental hospitals and psychiatric wards belonging to general hospitals, and followed until 1978, the corresponding figures were 2.7 % per year for men and 2.4 % for women if all kinds of deaths were counted. The high frequencies found can probably be explained by two facts: firstly, deaths caused by physical disorders were included in the investigation, and secondly 38 % of the men and 36 % of the women among the patients also suffered from alcoholism.

In several studies (2,18,19,20,21,22) the cause of premature death among drug addicts has been analyzed. Generally the addicts seem to be predisposed to die drug-related deaths; such as overdose deaths, deaths due to intoxications and all kinds of violent deaths connected with the addicts' hard life in the criminal subculture. About one fourth of the addicts seem to commit suicide (8,23). No studies have analyzed differences between the suicide cases and other causes of death.

Most authors point out the lack of knowledge of factors behind fatal outcome in drug addiction. The presence of alcohol use and heavy criminality in the background were however found to be related to violent deaths in drug addicts in a study by Joe (4). Young single male drug addicts seemed to be at a specially high risk to die early (4). In about one third of the deaths among addicts with a mixed abuse in Gothenburg (15) alcohol abuse was involved.

The mortality rate in male addicts was reported to be three times higher than in female addicts in one British investigation (23). In Haastrup's sample of opiate addicts from

Denmark 2.4 % of the male addicts and 2.0 % of the female addicts died every year (8). The mortality experience among female addicts thus seems to be lower than among male addicts.

A more profound prospective-retrospective study of young drug addicts might give some more enlightenment on these conditions. It might also give some information about the relationship between excess mortality and drug career which is not either well understood. These are the ambitions of the present investigation.

METHOD AND MATERIAL

The following study originates from a ward for treatment of drug addicts, offering inpatient treatment and detoxification at St. Lars hospital in Lund, a university town in southern Sweden. The ward with 14 beds opened in 1970. During the period when the sample was collected the unit was the only specialized unit serving an urban, suburban and rural population of about 550 000 inhabitants. Geographically Lund is close to ports such as Malmö and Helsingborg as well as close to the Danish capital of Copenhagen. Many of the drug addicts in the region are commuters between these cities. Often they buy their drugs in Copenhagen.

The treatment facilities in Lund have been described elsewhere (24,25). In brief the department has been under the same management since 1970. Generous conditions have made it possible to let the addicts receive treatment as inpatients after one or two days of application. The patients were generally admitted to the ward because they wanted detoxification and often also further rehabilitation at a therapeutic community or family home for adults. In 27 % the patients were referred to the ward from other institutions such as schools for delinquents or other psychiatric

clinics. The rest of the patients applied for treatment on their own initiative.

The sample

The material includes 524 patients, consecutively admitted to the ward from 1 July 1970 to 1 July 1978 and treated under the diagnosis of narcotic addiction (drug dependence). Fifteen additional patients who gave wrong birth number and consequently not could be controlled by registers were excluded from the beginning.

At the end of the first week of treatment the patients were categorized by the senior psychiatrist after dominating type of abuse into three classes:

1. Opiate addicts. 2. Amphetamine abusers. 3. Patients with a mixed abuse.

1. Opiate addicts (n=191; M/F 131/60) gave a history of intense opiate abuse just before and during at least half a year before admission. Ninety-six percent had a habit of injecting opiates, mostly heroin, intravenously. The rest were smoking or snorting heroin. All developed a typical opiate withdrawal syndrome during the stay at the hospital.

2. Amphetamine abusers (n=197; M/F 135/62) gave a history of intense amphetamine abuse just before and during at least half a year before admission. Eighty-eight percent injected amphetamines intravenously. The rest of the patients used to drink solutions of amphetamine. They often reported periods of amphetamine abuse, alternating with periods of alcohol drinking. All had a clinical picture of amphetamine addiction (6,26) with hypermotility, restlessness and suspiciousness.

3. Patients with a mixed abuse (n=136; M/F 100/36). All had a mixed abuse of cannabis, sometimes combined with other

hallucinogenic drugs (such as LSD), alcohol and sedatives. "Hippies" treated at the beginning of the 70's often belonged to this group. They had abused all kinds of legal and illegal substances, often in combination and at the same time during at least half a year before admission. The withdrawal symptoms fluctuated after dominating substance abused. In half of the cases the patients occasionally had been injecting stimulants or opiates (less than 100 injections reported). Mostly they declared that they did not really like using needles and syringes. They all had a heavy daily use of drugs before admission.

Interview at first admission

When admitted to the ward the patients went through a careful medical examination and a semi-structured interview. Urine samples were sent to the toxicological laboratory for analysis on the first day of admission and twice a week during the treatment period. The intensity of drug addiction was estimated by asking the patients how many injections they usually gave themselves every day and for how long time this had been going on in order to get a rough number of total injections (27).

The patients further gave a detailed report on type of abuse and criminality. Earlier treatment was also well reported. Data on criminality and earlier treatment were verified by checking other social and hospital registers. The patients were sometimes unwilling to give detailed information about parents and siblings. Missing data were also caused by a premature discharge from the ward.

The following variables were used in the analysis:

Alcoholism in parents or siblings: Anyone of the parents or the siblings were known to have had alcohol problems.

Mental disturbance in parents or siblings: Information about treatment for psychosis, affective disorders or neurosis among anyone of the parents or siblings. Character disorders were not included.

Broken home: Divorce between the parents before the patient had been 15 years old. Taken care of in foster homes or institutions (3 % of the total sample).

Finished comprehensive school: In Sweden all children are supposed and supported to attend comprehensive schools for 9 years, between 7 and 16 years of age. School registers were checked in some cases.

Intravenous habit: More than 100 injections of opiates or stimulants.

Periods of heavy drinking of alcohol: Heavy drinking lasting at least one week. Information of the quantities consumed or the presence of symptoms of increased tolerance or dependence was not available.

Earlier psychiatric treatment: Psychiatric treatment at Departments for Child Psychiatry and Adult Psychiatry.

Earlier treatment at centers for drug addicts: Including both outpatient treatment at special clinics and stay at therapeutic communities.

Compulsory first admission: Initiated by social authorities or parents. Based on Swedish law.

Earlier imprisonment (Prison sentence earlier than first admission): Patient's reports checked by using central criminal register.

Psychosis at first admission: An additional diagnosis of a toxic and transient psychosis was made.

Follow-up

All patients have been traced until 1 July 1984 by means of central and parish registers. By using the central mortality register the patients who were deceased could be identified. They were classified according to ICD8 (28). Criminality among the subjects was controlled by using the central criminal register. Information was further collected from police districts and forensic institutes. In ninety percent (n=56) postmortem examinations have been performed. Blood and urine samples were toxicologically analyzed in 55 cases.

Autopsy records and police reports were reevaluated by a trained forensic expert in all cases, including the six cases who had not been examined postmortem, according to the standards and traditions of the Forensic institute at the University of Lund. The expert had no access to earlier clinical records.

The causes of death were categorized as follows:

Suicide (n=19). To include a patient in this category the forensic expert demanded that there should be a distinct intention demonstrated by the subject to commit suicide. The diagnosis was in 16 cases in agreement with the diagnosis of the death certificate (ICD-8: 950-959) (suicide), and in three cases (980-989) there was disagreement, which means that the official diagnosis was that of intoxication or overdose.

Drug-related deaths due to intoxications or overdoses (n=35). Cases of intoxication or overdoses of narcotic substances, psychotropic substances and/or alcohol without suicidal intent.

Drug-related deaths due to accidents and violence (n=8). Death seemed to be a result of reduced ability to identify risks, due to toxic influence of drugs, in combination with accidents.

The last two groups are sometimes combined in the text and the tables and called other drug-related deaths.

No further deaths due to somatic diseases were found to have occurred in the sample.

Analysis of the representativeness of the sample

The files from 1970 to 1984 of the Department of Forensic Medicine, University of Lund, were searched to find cases of death connected with intoxication of narcotic substances which had occurred to persons registered in the catchment area. Data about these cases were collected and analyzed. The quotient of cases who prior to death had been treated at the ward/not treated at the ward was calculated.

Statistics

Man-years of exposure to the risk of death were calculated (29). The expected number of deaths was estimated from death risks in the official statistics for the population of Sweden for the median year of follow-up (1975). Standardization has been carried out for age and sex. Significance levels were tested according to the Poisson distribution (30). Differences between proportions have been tested with the chi-square method (31).

RESULTS

In figure 1 the year of first admission for the three different groups of addicts is illustrated. The proportion of opiate addicts and amphetamine abusers was similar during the year. Patients who had a mixed abuse were somewhat more frequent during the first year of the sampling period.

Background characteristics at first admission are presented in Table 1. Average age for men was 23 years and for women 22 years. The proportion male:female was the same from year to year, namely 7:3. Just as in similar studies (32,33) of samples of drug addicts there are high frequencies of alcohol problems and mental disturbances in the nearest family. There are also high rates of broken home, earlier treatment and criminality resulting in earlier imprisonment.

The patients had begun to abuse illegal drugs when they were 14-15 years old. The debut substance was most often cannabis but could also be solvents or stimulants. As many as 37 % reported having had periods of heavy drinking of alcohol. These periods could go on for weeks often alternating with other type of abuse, for instance of stimulants.

In half the cases the patients reported that they had had hepatitis and according to the medical records the hepatitis was of the type of serum hepatitis or hepatitis B. In more than half of the cases the patients also reported to have had other kinds of drug-related physical illness, often bacterial infectious diseases or sequels of accidents. Transient psychoses were diagnosed in 13 %.

There were only few differences between the sexes. The female addicts did not drink alcohol in periods as often as the male addicts. Furthermore the female addicts obviously seldom were sentenced to imprisonment in comparison with the male addicts. This could be explained by the fact that

the females often supported their habit by prostitution which is not criminal in Sweden. The males had to commit crimes such as thefts and burglary to support their habit and consequently more often got in conflict with the law.

Between the groups with the different types of dominating abuse there were several differences. Opiate addicts had more often had previous contact with treatment centers than the others; they had a lower frequency of compulsory first admission and a lower frequency of psychosis at first admission. They reported less often periods of heavy drinking of alcohol. Alcohol was also less often the debut substance - they had instead preferred cannabis. Amphetamine abusers had more often than the others been imprisoned prior to first admittance. Moreover they abused alcohol to a wider extent than patients in the other groups.

The group of patients with a mixed abuse had a higher frequency of mental disturbances among parents and siblings. The debut substance was often alcohol.

Mortality during the follow-up period.

During the follow-up period 62 patients had died. There were 19 suicides and 43 other drug-related deaths caused by intoxication, accidents or violence. In table 2 the observed and expected deaths and the deaths per 1000 person year among subjects categorized after dominating abuse at first admittance are presented. In the total sample the observed/expected death rate was 3,5 and observed deaths per 1000 person year were 12. The opiate addicts had the highest death rates: male addicts 24 deaths and female addicts 14 per 1000 person year and the stimulant abusers the lowest: male abusers 10 deaths and female abusers no deaths per 1000 person year. The difference between opiate addicts and amphetamine abusers were significant at the

1 % level (chi square statistics). Also the difference between male and female addicts in the opiate and amphetamine groups was significant ($p < .05$).

Time between first admission and death. Age of the deceased

Time between first admission and death is presented in figure 2. The number of deaths increases somewhat during the first six years, which is the period when all in the sample were followed up. Among the opiate addicts there were eight deaths during the first three years and sixteen deaths during the following three years. This means that of the original sample of opiate addicts on average 2.1 % died per year during these first six years. Then the death rate seems to decrease a little. The majority of suicides occurred during the first six years with a maximum during the sixth year. The male/female ratio did not change during the observation period.

When the addicts who later on died had been first admitted to the ward the male addicts ($n=52$) had had a mean age of 23 ± 5 years and the female addicts ($n=10$) a mean age of 20 ± 3 years. When they died the mean age for male addicts was 27.9 years and for female addicts 25.9 years and for all addicts 27.6 years. Age range among the deceased was 18-40 years.

Background data in suicides, other drug-related deaths and living subjects

Background data from the first referral are related to type of death in Table 3. The suicides differed from the living in having a higher frequency of mental disturbances among parents or siblings. They also more often had had periods of heavy drinking. The same two items differentiated suicides from other drug-related deaths ($p < .05$ and $p < .01$, respectively). Suicide was not related to type of abuse.

The frequency was somewhat higher in men than in women ($p < .10$).

The other cases of drug-related deaths seem to be significantly connected with a more intense abuse, expressed in variables such as a higher incidence of intravenous abuse, and a higher incidence of earlier treatment at other facilities for treatment of drug addicts before first admission to the ward. When comparing these last two items, suicides had similar frequencies as living addicts.

Mental disturbances among parents and siblings in the group of suicides

When analyzing data about heredity, given at first admission, among the suicide cases, as many as eight had reported that there were mental disturbances in one of the parents and/or the siblings. In three cases the mothers suffered from affective disorders, in one case the mother had got a diagnosis of schizophrenia and in one case the mother had had anorexia nervosa when she was younger. In one case the patient's father had been treated for depressions. In one case the only brother had committed suicide. In the last case two siblings were said to have neurotic disturbances. In all cases mentioned the relatives seemed to have had impairment of functioning and been subjected to psychiatric treatment.

Among the suicide cases with missing data three cases one had developed schizophrenia and a second one a manic-depressive psychosis during the follow-up period. In the third case the patient had been adopted as a small child and did not know anything about his biological parents.

Cause of death, a survey:

Suicide (n=19, (M/F17/2): In eleven suicide cases medical poisoning was the rule. The two female addicts are to be found among these cases. The toxic agent was in eight cases barbiturates, in one case imipramine, in one case phentiazine and in the last case an intentional overdose of amphetamines. Death was furthermore caused by hanging in four cases, bleeding to death in one case, deliberate poisoning with gas (CO) in two cases and deliberate freezing to death in the snow during a cold winter in one case. In two of the last mentioned cases no autopsies were performed.

Drug-related deaths due to intoxications or overdoses (n=35, M/F28/7):

The intoxications could be divided into: intoxications with morphine or morphine derivatives, often together with other sedatives (n=19) amphetamine derivatives (n=3) and medical poisoning with psychotropic substances such as barbiturates and/or sedatives (n=8). Alcohol was the main toxic agent in 2 cases. Impairment of liver were found in all cases and signs of heart disease in 14 cases. In the remaining three overdose-cases, no postmortem examination had been performed. The corpses were found at a public toilet in two cases and at home in one case with syringes by the side of the bodies and fresh needlemarks in the arms, suggesting an overdose of morphine or heroin, which also became the diagnosis in the death certificates.

Drug-related deaths due to accidents or violence (n=8M/F7/1)

Death seemed in these cases to have a connection with a reduced ability to identify risks due to the fact that the subjects were under the influence of toxic drugs. Death could also be a consequence of neglect, being part of life in the subculture. Automobile accident resulted in deaths in three cases, drowning in one, fire accident in one, freezing to death combined with intoxication of morphine in

one case and murder in one case. The eighth case of death in this group, that of a young female heroin addict and prostitute, is a violent death, even if the cause of death is unknown according to the death certificate. She was found dead in a tied-up bin-liner. A murder investigation took place but did not give any results. A toxicological analysis of her blood gave an answer positive for barbiturates. In totally 7 of the cases in this group psychotropic substances such as amphetamine, morphin derivatives, sedatives and alcohol were found according to the toxicological analysis.

Findings at postmortem examination

The results of the post-mortem examinations, including data from the police reports and the results of the toxicological analysis are presented in Table 4. Thirty-seven (69 %) of the patients had stayed in the area where they lived at first admittance and died there; 15 (24 %) had moved to the Stockholm area and 10 (16 %) lived in other Swedish towns. Having a home address in Sweden, four persons had died abroad, three in Denmark, one, a sailor, in Nigeria.

The corpses were found in their own homes or in that of a friend's in 36 cases (58 %), out of doors or at a public toilet in 14 cases (23 %) at a youth hostel or a hotel in 6 cases (10 %) and finally in prison or at hospital in 6 cases (10 %). Background of the last 6 cases is as follows: two persons had committed suicide in prison and one while staying at a mental hospital. Three other drug addicts had been taken to hospitals and shortly afterwards died there as a result of overdoses or accidents.

As many as 29 (47 %) of the addicts were under some kind of treatment during the last month of life. Four were inpatients, as mentioned above. Five were on leave from psychiatric clinics or mental hospitals.

Two of the patients in the suicide group had visited psychiatrists, three general practitioners, one a psychologist and one a social worker. Among the patients in the other groups of drug-related deaths, four had visited psychiatrists, six general practitioners, one a psychologist and two social workers.

There was information of divorce or separation from partners less than a year before death in nine cases. Among the suicide cases seven had written short notes saying farewell.

When it comes to reports on violent behaviour, there are earlier reports years ago about this type of behaviour in two cases in the suicide group. One male addict had beaten his wife and another male addict had threatened his parents with knife. Both had been under the influence of amphetamine and alcohol and been taken by the police to a psychiatric clinic where they got treatment. But in three cases, of which two were in the suicide group and one among the others, the addicts had tried to beat other persons with their fists, namely female partners, unknown women in the street or male staff-members at a psychiatric clinic, behaving desperately and violently during the last three days of their lives.

In 50 of the 56 cases who had been examined post mortem, there were notes in the autopsy records concerning the existence or nonexistence of needle marks. Missing registration was in all cases due to the fact that too many hours had passed between death and autopsy. In a total number of 37 cases of 50 examined (74 %) there were needle marks - namely in 35 out of 48 (73 %) of the addicts who originally belonged to the group of opiate and amphetamine abusers (7 suicide cases, 28 other deaths) and 2 out of 14 (14 %), (both among other deaths), who originally belonged to the group of patients with a mixed abuse.

Toxicological analysis was performed in 55 cases. (In one missing case the addict who committed suicide had poisoned himself with gas according to the medical officer). Illegal substances, opiates or amphetamines were the main toxic agent in 26 cases, barbiturates in 13, alcohol and other psychotropic substances in 6 cases respectively and CO in 3 cases. In 2 cases there were no findings.

The substances mentioned were not the only ones. Two or three different types of psychotropic substances, legal or/and illegal, could be present at the same time. Alcohol was present, added to the other drugs or alone in totally 29 cases (53 % of all analyzed cases). The medium concentration of alcohol in peripheral blood was 1,3 promille - suicide versus other cases of violent deaths 1,06 ‰ : 1,38 ‰.

Killing substances were in this order: opiates, barbiturates, alcohol and/or other psychotropic substances.

Heart disease and liver disease.

As many as 16 (29 %) among the examined cases presented different kinds of heart disease at autopsy, such as cardiopathia or myofibrillary degeneration (n=7) focal myocarditis (n=4) hypertrophia + fibrosis (n=3) and arteriosclerosis of the coronary vessels (n=2). Fourteen of the cases were found in the group of intoxications and overdoses, two in the suicide group. Similar findings are reported earlier (34,35,36).

Hepatitis of all degrees was found in all examined cases. The findings could be delicate and small but also, as in two cases indicate acute hepatitis and as in seven cases a fat liver or a cirrhosis. The findings agree with earlier reports (21).

The career perspective

In many of the 62 cases the patients had over and over again been patients at the ward of first admission. 58 % were treated more than once. In some cases it was possible to follow the patients to their last year, in a few cases even to their last days of life. Five of the opiate addicts belonged for periods to a methadone maintenance program. At least 29 (47 %) were under some kind of inpatient or outpatient treatment when they died, which meant that they could be followed thoroughly. By interpretation of the details from the medical records in every case and the postmortem records it is possible to estimate where in the drug career (37,38,39,40,41) the addicts were when they died. Forty-three of the 62 were still compulsive abusers either (Table 5) of illegal substances, mostly heroin or of legal ones such as alcohol and sedatives. At least 10 of them were down at the so-called rock-bottom, irretrievably lost using a mixture of all kinds of drugs and living an exhaustive and self-destructive life in the narcotic or criminal subculture.

Six made just when they died strong efforts to abstain from drugs. They were seeking treatment with new energy or they planned to leave the city and the drugs to go to the countryside. "Just one fix" is their posthumous reputation.

Another six had been abstaining from drugs for more than one year, sometimes for as long as three years but relapsed and died, a disaster to their relatives who had thought that the danger was over. Five males left the drug scene, abstaining from illegal drugs, but living lonely and isolated. They were described as shy, sensitive and brooding. Two persons in this subgroup committed suicide. - Another two of the patients later on developed major mental disorders and committed suicide. There were finally no obvious sex differences in "positions" along the drug career.

Investigation of representativeness

Twenty-two cases with a diagnosis of intoxication of narcotic substances and who were living in the catchment area at time of death were found in the forensic register. Of these ten cases (45 %) were identified as belonging to the present series of addicts. Seven of the other twelve cases were found in the registers of nearby psychiatric clinics in Lund and Malmö. Three had in life got a diagnosis of compulsive narcotic abuse, one a diagnosis of schizophrenia + brain abscess + heroin dependence, one a diagnosis of alcohol and sedative abuse + depression and one just a diagnosis of neurosis. The last known case, an eighteen year old boy, was said to be in an experimental stage. He had not had any psychiatric treatment but had had the possibility of talking to a psychiatrist a few months earlier when he was rescued from an overdose. He later on died from a single injection of heroin.

Of the twelve cases, two were distinct suicides with farewell letters. The remaining ten had all died of intoxications or overdoses.

Detailed police reports, autopsy records and clinical data made it possible to establish how involved in drugs the twelve persons had been and which stage they might have reached in their drug careers (Table 5). Seventeen cases were known to the psychiatric services and they were all but two cases in the compulsive or later stage of addiction.

The five cases, not found in the medical records, all according to detailed police reports, including interviews with relatives, were in an experimental stage of addiction, presumably not identified as drug addicts, by themselves or others. One of them was known to be a dealer of narcotics.

DISCUSSION

As many as 90 % of drug related deaths among a clinical sample of drug addicts followed for at most fourteen years were found to have had been subjected to postmortem examinations. When trying to study the representativeness of the sample studied, it proved to be a feasible way of searching the local forensic register for narcotic- related deaths from the same area during the period in question.

Roughly half the cases found at this investigation or 55 %, were not known to the present specialized unit. But only one fifth (23 %) were not known at hospitals at all. The unknown cases had often, in contrast to the other known cases, died at an early experimental stage of the drug career, presumably not yet conscious of a need for help.

Thus almost all drug addicts in severe addictive stages, beyond the experimental phase, are known to the psychiatric services in Sweden. This finding is in agreement with other Swedish studies (15).

Most of the active addicts in the region seemed in fact during the period in question to have found their way to the special ward in Lund.

Background

The young addicts who applied for help at the ward identified themselves as drug addicts or "junkies". It was during the early seventies a kind of announcement that you had been a patient at "The F" or "Effet", a name referring to the number of the ward at the hospital. The ward was popular and became known as a place where you could get understanding and professional care.

The background data belonging to the 524 drug addicts, who formed the sample studied, had the same characteristics as other samples studied in post-treatment follow-ups, namely a high percentage of alcoholism and mental disturbances among near family members, and of broken homes (32,33). Long term studies are mainly concerned with opiate addicts (3,8).

The sample in this study is naturally categorized into opiate addicts, stimulant abusers and patients with a mixed abuse. This classification gives opportunities to compare the results with earlier studies of opiate abusers, and amphetamine abusers (16).

The patients with a mixed abuse used illegal drugs but were no "hard core addicts" as the others. In this last group 28 % reported mental disturbances in the nearest family, a figure which is significantly higher than in the other groups and not possible to explain. In this group compulsory treatment was more common at first admittance.

The females, representing 30 % of the addicts were evenly spread in the three categories of patients. The differences between them and the male addicts were few. They did not drink alcohol in periods as often as the males and they less often had a history of earlier imprisonment.

Mortality

At the follow-up 6-14 years after initial treatment (mean follow up period 10 years) it was possible to get detailed information about all 62 who had died during the observation period. In 90 % there were postmortem examinations. All had died drug-related deaths.

The 62 addicts died at an average age of 27,5 years. This figure corresponds very well to the figures in a Danish

study (8) and a forensic study from Stockholm (34) where 246 deceased narcotic addicts were found to have an average age for male addicts of 28 years and of 25 years for female addicts.

The most obvious results of comparing the deceased with living addicts are two: firstly the male addicts suffer a greater risk of dying a violent drug-related death than the female addicts; secondly the opiate addicts are at a higher risk of dying prematurely than the amphetamine abusers and the addicts with a mixed abuse. The male opiate addicts died 5,4 times as often as expected, male amphetamine abusers 2,5 times and male persons with a mixed abuse 3,0 times as often as expected, when compared with standards for the general Swedish population.

The opiate addicts then have about the same excess mortality as in other samples (3,8) and the amphetamine addicts the same as in other Swedish samples, dealing exclusively with this group of abusers (10,11).

The female addicts who entered the ward were on the average one year younger than the male addicts, even if they had started to abuse drugs at about the same time during adolescence. The morbidity is usually great among female drug addicts (24) and certainly more impressing than in male addicts. But mortality is lower. For instance no one of the female amphetamine abusers had died during the observation period. When the females died they were on the average one year younger than the males, namely 26,4 years.

In one fourth of the cases the addicts committed suicide. It is the same proportion as in other studies (8,23). But it is also possible to find a suicide-prone profile or in other words to find predictive factors behind this kind of fatal out-come. At first admittance the suicide cases had reported at a significantly higher degree than others that

there were mental disturbances in the nearest family. During the follow-up period two of the suicide cases had developed major mental disorders. The subjects in the suicide group also had a high frequency of heavy alcohol drinking. There are no systematic psychiatric ratings in the study but the findings remind of what is known about suicide cases in alcoholics. The latter may namely have the following traits: depressive symptomatology and heredity for mental disorders but no typical melancholic disorders (42). The fact that the drug addicts who later on committed suicide may have traits in common, possible to discover during treatment, might be of significant value in prevention of tragedies.

A striking finding is the fact that as many as sixteen (29 %) had undiagnosed heart diseases when they died. Fourteen were found among the subjects in the group of intoxication and overdoses. All the subjects had signs of hepatitis, sometimes small and delicate changes, sometimes as in seven cases acute hepatitis or cirrhosis. The quantities of toxic substances found at autopsy did not always impress as absolutely killing. In some of the cases a combination of a liver or heart disease and the toxifying effects of drugs must be the cause of death.

The majority of the deceased drug addicts turned out to be in a compulsive abuse of heroin, alcohol or barbiturates and in a few cases amphetamine. The drugs that give the well known physical dependence (6,21) have kept their grasp of the individuals. When analyzing the cases you get the impression that the addicts sometimes died just because they were physically and mentally worn out. The mixture of drugs they used - some of them might have three or four different kinds of psychotropic substances in their bodies, such as morphine, barbiturates, benzodiazepines and alcohol - seemed also to have given a polydrug-intoxication, where

all kinds of interactions might have taken place in between the different substances, creating incalculable risks.

Half the addicts were in touch with councillors or medical officers during their last months of life. Almost all of the medical officers seemed to know that their patients were drug addicts and consequently seemed to have been cautious when prescribing sedatives. There were no findings of prescriptions of barbiturates. Instead there was often a comment that the addicts had bought their pills on the illegal market.

Career perspective

As many as seventeen individuals of the 62 deceased were practically on the point of leaving the drug scene behind when they died; six of them had had a relapse after having abstained from drugs for more than one year. Their tolerance to opiate drugs had been reduced and a relapse, during which they perhaps used the same amount of drug as previously, killed them. In two cases the overdose seemed to be deliberate and the circumstances suggested that the addicts had had an abstinence violation reaction, as described by G. Marlatt (43). In five of the seventeen cases the former drug addicts obviously did not solve the so-called marginal conflict (44); they became "marginal men" (45) not being able to get integrated in society after years in drug subculture. They died as ex-addicts, but lonely and shy, often described as sensitive and brooding, finding no friends.

By an interpretation of clinical and post-mortem data this study gives a more dynamic view of the course of drug addiction. Not wanting to exert pressure upon data it is still possible retrospectively to identify certain key points during a fourteen year perspective of the subjects's drug carrier - a conception often used in long term inves-

tigations of drug addicts (37,38,39,40,41) - but not often found in mortality studies.

In the first place there seemed to have been an obvious onset of abuse, an incitement to indulge into a drug carrier, to adopt the lifestyle of "junkies". This onset usually took place when the subjects were 15 - 16 years old.

Secondly, seven years later, at the age of 22 to 23, the subjects were identified by themselves or by other as "junkies" or narcotic addicts, young individuals involved in a heavy devastating and disabling abuse of legal and illegal drugs and at this point admitted to treatment at a special ward for treatment of drug addicts.

After six years of follow-up, seven percent of the addicts in the sample had died. The figure gives a hint of excess mortality being most pronounced during the first six years after treatment, possibly getting down to a somewhat lower figure at later stages of the career. The findings are in line with earlier studies pointing out the first years after treatment to be especially hazardous.

In fact there seems to be a critical period after ten to twelve years of abuse when the addicts are 26-28 years old. The highest frequency of death seems to be just at that age. As shown in a previous paper (46) addicts who have matured out of addiction often tell people about this critical point: "One day I had to decide if I should live or die" is the saying. Possible explanations might be that during this period suicide risk seems to be high, and that the efforts to abstain from drugs are putting strain on the individuals.

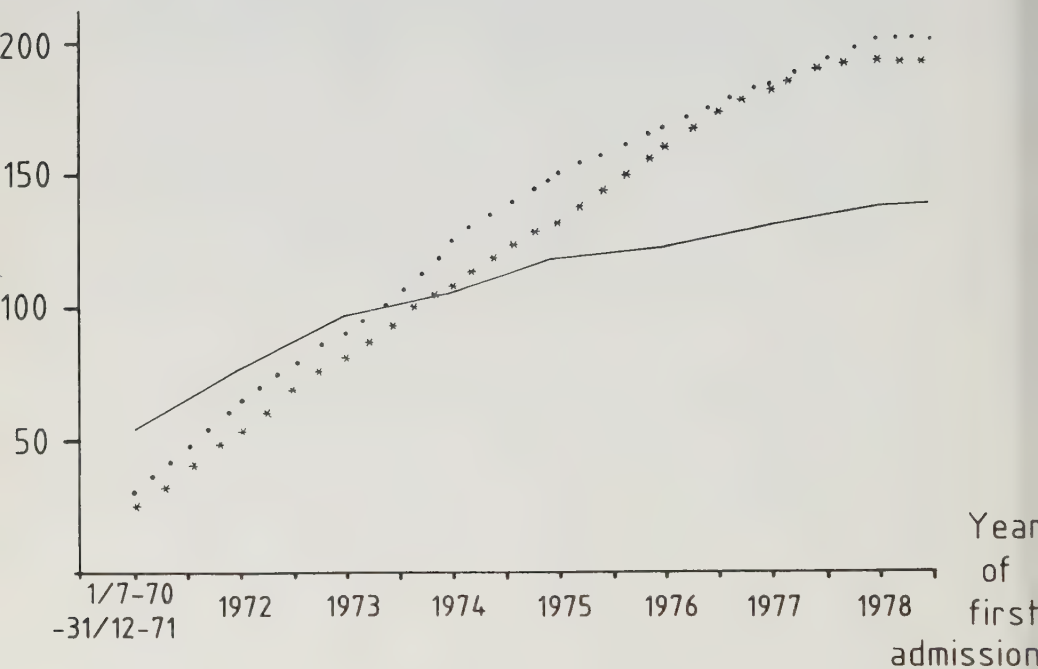
To conclude: Predictive factors behind the excess mortality in the sample studied were mainly connected with sex and choice of drugs. Males run a greater risk of dying than

females, opiate addicts were at a greater risk than amphetamine abusers. A suicide-prone profile was found, as a significant high part of those who had committed suicide proved to have had a hereditary disposition for mental disturbances - especially affective disorders.

Finally a perspective is given of where along the life cycle or at which stage death interrupted the drug career.

Figure 1

Number of patients



* * = opiate addicts: 191 M/F 131/60
 . . = stimulant abusers: 197 M/F 135/62
 — = mixed abuse: 136 M/F 100/36

Figure 1.

Accumulated number of patients admitted to the ward for treatment of drug addicts in Lund during the period 1st of July 1970 to 1st of July 1978. The patients are divided into opiate addicts, stimulant abusers and patients with a mixed abuse.

Figure 2

Number of deaths (62)

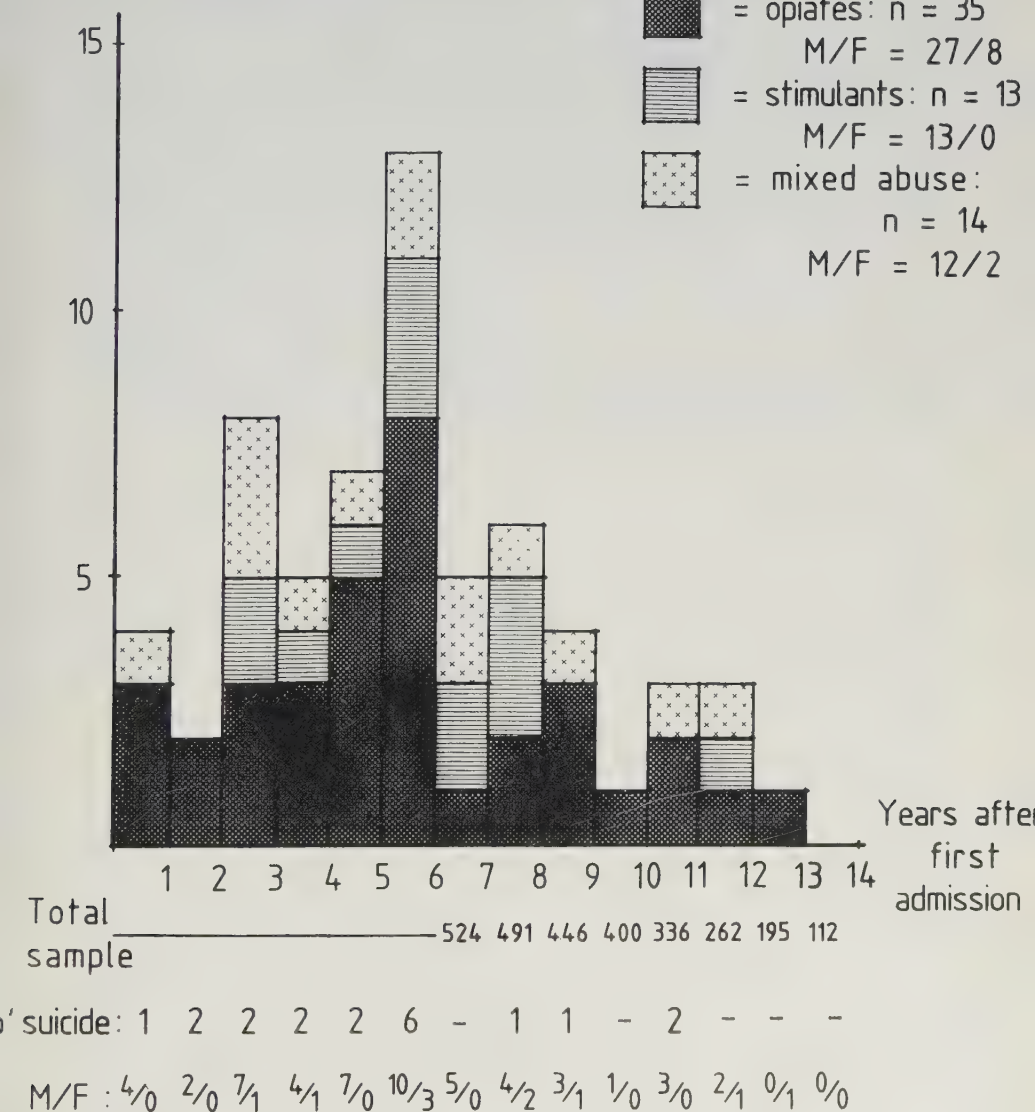


Figure 2.

Total number of deaths (n=62) among 524 drug addicts in a time perspective; occurrence in years after first admission. The patients are divided after dominating drug at first admission in opiate addicts, abusers of stimulants and patients with a mixed abuse.

Table 1. Background data in 191 opiate addicts, 197 amphetamine abusers and 136 patients with a mixed abuse at first admission to hospital.

Number M/F	Opiate addicts n=191 M/131 F/60	Amphetamine abusers n=197 M/135 F/62	Patients with a mixed abuse n=136 M/100 F/36	Total male n=366	Total female n=158	Total n=524
Background data:						
Alcoholism in parents and/or siblings	68/161	56/155	50/123	115/301	59/138	174/439
Mental disturbances in parents/siblings	23/159	27/155	44/124	62/295	32/139	94/438
broken home	83/177	76/173	55/128	138/331	76/147	* 214/479
Finished comprehensive school	142/171	134/172	57/128	248/322	125/149	373/472
Married	11/179	10/177	11/130	19/338	13/148	32/487
Divorced	5/179	22/177	3/130	22/338	8/148	30/487
Children	30/176	45/176	34/131	64/332	35/151	99/484
Debut substances:solvents	17/170	19/165	16/128	42/318	10/144	52/462
cannabis	120/170	91/165	57/128	188/318	80/144	268/462
stimulants	11/170	30/165	5/128	29/318	17/144	46/462
opiates	9/170	1/165	1/128	4/318	7/144	11/462
alcohol and other drugs	13/170	24/165	49/128	55/318	30/144	85/462
Intravenous habit	174/191	157/197	23/136	242/339	112/146	354/462
Periods of heavy drinking of alcohol	23/155	70/151	67/127	124/301	36/132	** 160/434
Earlier psychiatric treatment	83/158	99/161	80/129	172/305	90/142	262/448
Earlier treatment at centers for drug admission	63/152	39/157	16/125	73/291	45/143	118/435
Compulsary, first admission	12/191	37/197	40/136	58/366	31/158	89/524
Prison sentence earlier than first admission	70/169	86/183	31/127	164/326	23/153	*** 187/480
Psychosis at first admission	6/189	33/196	30/136	51/364	18/157	69/521
Age of onset of abuse, mean $\pm$ SD	15 $\pm$ 3	16 $\pm$ 3	17 $\pm$ 4	16 $\pm$ 3	15 $\pm$ 3	16 $\pm$ 3
Age at first admission, mean $\pm$ SD	22 $\pm$ 4	23 $\pm$ 5	23 $\pm$ 6	23 $\pm$ 6	22 $\pm$ 5	23 $\pm$ 5

chi square counted on comparison between opiate addicts, amphetamine abusers and patients with a mixed abuse (df=2); between male and female drug addicts (df=1).
*=5% level, **=1% level, ***=1% level

Table 2. Observed and expected deaths of 35 opiate addicts, 13 amphetamine abusers and 14 patients with a mixed abuse.

		Observed deaths (Fo)	Expected deaths (Fe)	O/E	Deaths per 1000 pers. ye
OPIATES					
	Male	27	5.0	5.4**	24
	Female	8	1.0	8.0**	14
AMPHETAMINE ABUSERS					
	Male	13	5.3	2.5**	10
	Female	0	1.6	-	0
PATIENTS WITH A MIXED ABUSE					
	Male	12	4.0	3.0**	12
	Female	2	1.0	2.0	5
TOTAL	Male	52	14.3	3.7**	15
TOTAL	Female	10	3.6	2.8**	6
TOTAL SAMPLE		62	17.9	3.5**	12

Poisson distribution

**= 1%-level

at first admission to hospital.

Number M/F	Suicides n=19 M/17 F/2	Other violent deaths n=43 M/35 F/8	Living subjects n=462 M/314 F/148
<u>Background data:</u>			
Opiates-amphetamine-mixed	8/5/6	27***/8/8	156/184/122
Alcoholism in parents and/or siblings	5/14	16/33	153/392
Mental disturbances in parents and/or siblings	8/16*	5/33	81/389
Broken home	6/15	19/39	189/424
Finished comprehensive school	11/16	28/35	334/420
Married	1/19	4/41	27/426
Divorced	1/19	2/41	27/426
Children	4/19	8/40	87/424
Debut substances:solvents	2/19	4/43	46/462
cannabis	9/19	20/43	239/462
stimulants	2/19	3/43	41/462
opiates	0/19	1/43	10/462
alcohol and other drugs	3/19	9/43	73/462
Intravenous habit	12/19	35/43*	307/462
Periods of heavy drinking of alcohol	10/15*	11/35	139/383
Earlier psychiatric treatment	10/14	23/37	229/396
Earlier treatment at centers for drug addicts	2/14	18/35**	98/385
Compulsary first admission	4/19	7/43	78/462
Prison sentence earlier than first admission 9/15(*)		13/37	165/427
Psychosis at first admission	2/18	3/43	64/460
Age of onset of abuse, mean $\pm$ SD	17 $\pm$ 5	15 $\pm$ 4	16 $\pm$ 3
Age at first admission, mean $\pm$ SD	23 $\pm$ 5	22 $\pm$ 4	23 $\pm$ 5

chi square counted on comparison between suicidal deaths and living drug addicts (df=1); other violent deaths and living drug addicts (df=1).

*=5% level **=1% level ***=1% level (*)=10% level

Table 4. Circumstances around drug-related deaths in 62 cases.
Results of postmortem examination.

	Suicides n=19	Intoxications Overdoses n=35	Accidents n=8	Total n=62
<u>Variables</u>				
<u>Geographical data:</u>				
Died when living in				
Malmö-Lund-Helsingborg	10	22	5	37
Stockholm-Uppsala	5	8	2	15
Other towns	4	5	1	10
<u>Corpses were found:</u>				
at home or in a friend's home	12	21	3	36
at a hotel	2	4	-	6
out of doors, public toilet	2	8	4	14
in prison or at hospital	3	2	1	6
<u>Further details:</u>				
at leave from hospital	2	3	-	5
outpatient treatment	7	11	2	20
last month				
farewell letter	7	-	-	7
divorce, splitting from	5	3	1	9
partner < one year before death				
violent behaviour last three	2	1	-	3
days before death				
<u>Autopsy findings (n=56)</u>				
heart disease	2	14	-	16
hepatitis, all degrees	17	32	7	56
needle marks (n=50)	7	26	4	37
<u>Dominating toxic substance at death:</u>				
morphine derivatives	1	19	1	21
amphetamine derivatives	1	3	1	5*
barbiturates	7	5	1	13
alcohol	2	2	2	6
other psychotropic substances	3	3	-	6
CO (carbomonoxid)	2	-	1	3
no findings	1	-	1	2
presence of alcohol in a total				
number of cases	6	19	5	30
<u>Dominating drug at first admission:</u>				
opiates/amphetamines/mixed	9/5/5	23/6/6	3/2/3	35/13/14
<u>Sex:</u>				
male/female	17/2	28/7	7/1	52/10
mean age $\pm$ SD at death	28 $\pm$ 5	27 $\pm$ 5	29 $\pm$ 4	28 $\pm$ 5; M/F=28-5/26 $\pm$ 5
age range in years	19-40	18-37	23-35	18-40

*Samples from another 3 cases contained small amounts of amphetamines

Table 5.

In which stage of the career did they die? Estimation of clinical and postmortem data in 62 (M/F 52/10) treated drug addicts and in all cases of deceased with a diagnosis of intoxication of narcotic substances (n=22) from the catchment area, found at the representativeness investigation.

	<u>Treated drug addicts (n=62)</u>		<u>Cases with narcotic intoxication from the same area (n=22).</u>	
	<u>Suicides (n=19)</u>	<u>Other drug related deaths (n=43)</u>	<u>Treated at special clinic (belonging to the present sample)</u>	<u>Treated at psychiatric services</u>
<u>Variables:</u>				<u>Unknown</u>
At the point of death estimated to be in:				
an experimental stage				
a compulsive stage, abusing opiates or amphetamines	4	24	7	2 5(1)
a compulsive abuse of alcohol and sedatives	6	9		3
an ambivalent stage "trying to abstain"	4	2	2	
a mainly drug-free stage, having abstained > 1 year recently, obviously rehabilitated	1	5	1	
a drug-free stage, but lonely, isolated "marginal men"	2	3		
a stage of mental illness, having developed schizophrenia or affective disorders	2			2(1)
mean age $\pm$ SD at death	28 $\pm$ 5	28 $\pm$ 5	27 $\pm$ 6	26 $\pm$ 4 24 $\pm$ 4
age range in years	19-40	18-37	18-35	18-30 18-29
(11) suicides				

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